The Chemical Age

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Overseas Chemical Trade

THE Board of Trade returns for May, respecting overseas trade in chemicals, are again satisfactory, the imports having increased by £35,933 and the exports by £98,485. For the five months of this year there are increases in imports of £28,034 and in exports of £259,069. The total value of our export chemical trade this year, so far as it has gone, is £10,899,461, a figure that indicates the size of the chemical industry in itself as well as its importance as the source on which nearly every other industry draws for its essential materials.

On the import side there is no very striking difference in the figures for May, 1928 and 1929. In the dyestuffs section, however, it may be noted that the imports of intermediates have increased from £826 to £1,882, and those of alizarine from £819 to £4,467. Dyeing extracts, on the other hand, have fallen from £22,647 to £10,885, and there is a decline in extracts for tanning from £150,206 to £95,652.

The increase in the exports is again largely explained by the steadily expanding overseas trade in sulphate of ammonia, obviously due to the development of the synthetic industry. In May of 1928 the value of these exports was £286,592; last month it stood at £348,080. Japan is again a large purchaser. In the coal tar products section there is a striking decline from £404,755 to £202,257, which is explained by a drop in the export of tar and creosote oils from £283,499 to £86,397. There is a further increase in the export of drugs, and the exports of coal tar dyestuffs have advanced from £76,705 to £108,512. Painters' colours, always a strong feature, were particularly good last month, with an increase from £343,657 to £415,089.

The Work of the N.P.L.

AT Tuesday's inspection of the National Physical Laboratory by the General Board, numerous visitors were enabled to see some of the remarkable investigations now in progress. Of great interest to chemical engineers is the work on the mechanical properties of materials at high temperatures.

Until quite recently the strength of materials at high temperatures was estimated by breaking a test piece at the required temperature in a testing machine of the usual type, the test lasting a few minutes only. It has been found that at high temperatures metals and alloys will gradually increase in length under a constant tensile load and finally fail after a period which often extends over some months. With newly designed methods of testing, an endeavour is being made to find the maximum loads at different temperatures which such materials will stand for many years when the loads are continuously applied. Such maximum load at any temperature is called "the limiting creep load" for that temperature. As an example, take the case of a nickel-chromium alloy at 800° C., of which the breaking strength obtained by the ordinary testing machine was 18 tons per sq. inch. A load of 2 tons per sq. inch, continuously applied, broke a similar test piece in 37 days. Various steels and non-ferrous alloys are being investigated.

Among other objects of interest exhibited in the Metallurgy Department, mention may be made of specimens of new alloys representing some of the results obtained in recent researches on the production of materials for use at very high temperatures. Some of the alloys exhibited, containing special proportions of nickel, chromium, iron, carbon and silicon, exhibit much greater strength at these high temperatures than any materials hitherto produced.

Last year, attention was drawn to the work which was being done at the Laboratory on the investigation of the adsorption of hydrogen by steel, for example under the conditions obtaining in the Bergius process.

This work is being continued, and an apparatus has been devised allowing of the quick and accurate determination of the hydrogen adsorbed. It is to be noted that the preparation and cutting-up of the steel sample must be done with care, as a certain amount of hydrogen is apt to be lost in the process.

American Chemical Visitors

DR. ARTHUR D. LITTLE, president of the Society of Chemical Industry this year, is now, with Mrs. Little, on his way to England from New York for the annual meeting of the Society in Manchester, and is expected to arrive this week. He will be the first American to occupy the chair of the Society since 1913. Among the many opportunities of meeting him before the Manchester meeting, one of the pleasantest will be the "At Home" which Professor Jocelyn and Mrs. Thorpe are giving at 27, Chelsea Park Gardens on Friday, June 28. It is expected that there will be a number of American chemical visitors in England during the period of the President's stay, and Mr. F. Dee Snell, the secretary of the American Section of the Society, has the transport arrangements in hand.

Dr. Little, in a kindly message addressed to the American and Canadian members of the Society before sailing, refers to the Manchester meeting as "an opportunity, of which it is hoped many may take advantage, to consolidate the friendships so happily begun at our meetings of last year, and to establish many new ones under peculiarly favourable auspices." "As," he adds, "it is my pleasant duty to preside at the Manchester meetings, I earnestly hope that I may have the support of many of you, and a goodly representation from this side will be regarded as a compliment to our British friends. Those of you who have enjoyed the gracious charm of English hospitality will need no urging to bring you under its influence again; to those of you who have not done so the Manchester meeting provides an opportunity which I hope none of you who can arrange to take the trip will fail to utilise." Whatever may be done on this side, it is certain that no welcome could exceed in cordiality the unforgettable hospitality that the British delegates received in New York last autumn. The memory of it is a challenge to the Society and to Manchester, which one may be sure both will do their best to meet.

Fumes from Artificial Silk Works

DR. T. L. BAILEY'S report on his investigation regarding the emission of fumes from artificial silk works, which was reproduced in our Dyestuffs Supplement recently, is a scholarly document deserving careful study. The report indicates that it is from viscose silk factories that the trouble arises, owing to the production in the course of operations of sulphuretted hydrogen and other objectionable sulphur compounds. It is clear that the manufacturers themselves have for a long time clearly recognised the existence of the trouble, and have spent much time and money in attempts to obviate it. While the situation has to some extent been improved, no satisfactory method of removing the objectionable odour from the air from the works has yet been evolved. With regard to effluents from the works, Dr. Bailey points out that much can be done by ensuring that acid effluents are neutralised before mixing with effluents containing sulphides.

There is some satisfaction in the fact that the difficulty does not arise solely in Great Britain. Much work has been done in the United States on the treatment of the gases produced in the viscose process, but no successful method has yet been found. The works in Great Britain are said to compare favourably with those in Germany, and, moreover, the waste gas problem is receiving more attention in Great Britain than in Germany. The problem, though difficult, is much less so than many which have been solved in the past; and now that special attention has been called to it, a practical solution will doubtless be found.

Books Received

ALLEN'S COMMERICAL ORGANIC ANALYSIS. Vol. VII. London: J. and A. Churchill. Pp. 869. 30s.

A REVIEW OF THE TRADE OF BRITISH MALAYA IN 1928. By L. B. Beale. Pp. 90. 3s.

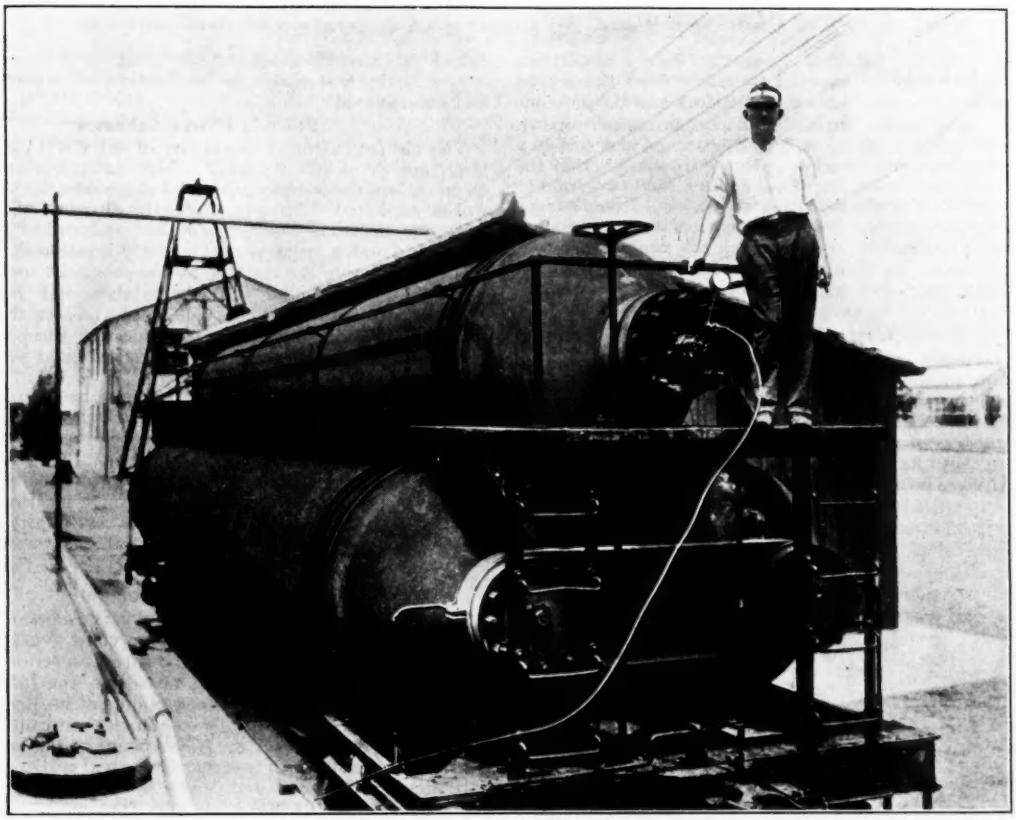
ANNUAL REPORTS OF THE SOCIETY OF CHEMICAL INDUSTRY ON THE PROGRESS OF APPLIED CHEMISTRY. 1928. Vol. XIII. Pp. 741.

CHEMISTRY AND PHYSICS. (Choice of Career Series, No. 1.) London: H.M. Stationery Office. Pp. 14. 2d.

The Calendar

June 26	British Chemical and Dyestuffs Traders' Association: Annual General Meeting. 2.30 p.m.	London.
28	Imperial Chemical Industries, Ltd.: Opening of the I.C.I. Agricultural Research Station. 12 noon.	Jealott's Hill, Maidenhead.
July 8–13	Society of Chemical Industry: Annual Meeting.	Manchester.
8	Reception at Municipal College of Technology. 7.30 p.m.	
9	Meeting of Council. 9.45 a.m. Annual General Meeting. "Science and Labour." Dr. A. D. Little. 10.15 a.m. Luncheon at Midland Hotel. 12.45 p.m. Visits to Works and Laboratories. 2.30 p.m. Civic Reception by Lord Mayor and Lady Mayoress. 7.45 p.m.	
10	Annual Meeting: "The Human Factor in Industry." Professor T. H. Pear. "Process Development." Dr. Arthur D. Little. 10 a.m. Luncheon by Clayton Aniline Co. at Midland Hotel. 12.45 p.m. Garden Party by invitation of Dr. and Mrs. Levinstein, at Ford Bank, Didsbury. 3–6 p.m. Annual Dinner, at Midland Hotel. 7.45 p.m.	
11	Annual Meeting. Presentation of Society's Medal to Sir Richard Threlfall. 10 a.m. Luncheon by Joseph Crosfield and Sons, Ltd., at Warrington. 11.45 a.m. Reception by University of Manchester. Conferment of Degree of D.Sc. on Dr. Little and Mr. F. H. Carr. 8 p.m.	
12	Visits to Works and Laboratories. Dinner and Dance given by British Dyestuffs Corporation. 7 p.m.	
13	Garden Party by Lord and Lady Stanley of Alderley, at Alderley Park, Cheshire.	

An American Helium Tank Car



Above is reproduced a Photograph of a Steel Tank Car used for the Transport of Helium from the New Plant Operated by the United States Government at Amarillo, Texas. The Car, one of two which were specially built for the Air Corps of the U.S. Army, carries Helium under a Pressure of 2,000 lb. per sq. in. The Helium contained will occupy at Atmospheric Pressure a Volume of about 200,000 cubic feet. It will be used in the U.S. Army's Airships. Shipments of Helium from Amarillo began on May 6 of this Year. An Account of the Process used for its Extraction from Natural Gas was given in "The Chemical Age" of June 15, p. 578.

The Exploitation of the Dead Sea.—(II)

By I. Melamede

In the following, dealing with economic factors, Mr. Melamede completes his article on the production of salts, etc., from the Dead Sea, the first part of which appeared last week. As previously indicated, we are indebted to the editor of "Discovery" for permission to publish this account, which appeared recently in the latter journal.

Of the salts to be obtained from the four evaporations previously discussed, the mass of carnallite from the second series of basins is the most important product and the only one which will be exploited at first. Transport prices permitting, a considerable portion of this will be despatched and sold in a raw form as 20 per cent. fertiliser. But it is possible that the high transport prices will force those holding the Concession to purify the whole of this product, with a view to obtaining a purer product containing 80-95 per cent. of pure potassium chloride, a very valuable product which can bear the highest transport expense. In this latter case, the carnallite will not even be transported, but will be treated in the same basins with a view to obtaining the purer potassium chloride.

Purity of Products

It must be noted that opinions vary as to the production of this final pure product. German chemical experts in particular maintain that the artificial carnallite from the Dead Sea will not, in view of its chemical composition, lend itself to the necessary process of purification, and on the strength of this assumption they have questioned the value of the whole scheme. All tests hitherto made and performed at the Dead Sea

Salt Works at the Dead Sea: This Small Plant is Already in Operation

have favoured the reverse view. Major Brock obtained a final product containing 80 per cent. of pure potassium chloride; Mr. Blake, on behalf of the Government of Palestine, obtained 88 per cent.; while Dr. Bobtelsky, of the Hebrew University of Jerusalem, from a special study of the question, obtained a product containing 99 per cent. of pure potassium chloride.

As regards the whole scheme—in which at least three complete cycles of evaporation are anticipated to be possible annually—when the number of cycles has been definitely fixed the quantities to be produced will then depend only upon the surface of evaporation available, that is, upon the number of basins used or constructed. Sooner or later one is justified in anticipating an annual production of 100,000 tons of potassium chloride. With each ton of potassium chloride are 5 tons of sodium chloride, hence there will be produced at the same time 500,000 tons of sodium chloride. These two chemicals, as already stated, will alone engage attention at the beginning. Potassium chloride will be immediately exported, sodium chloride will only be exported if transport prices will permit. Otherwise it will be stored on the spot, with the other products, magnesium chloride and magnesium bromide, to await the establishment of special plant to deal with them.

Ultimately, it is anticipated that there will be a production of 1,000,000 tons of potassium chloride and consequently 5,000,000 of sodium chloride, accompanied by immense quantities of magnesium chloride and magnesium bromide. With the exception of potassium chloride and part of sodium chloride, all salts will be treated on the spot, when there will be established an important electro-chemical industry. This will insure in the first place the production of bromine, chlorine and caustic soda.

Electric Power Schemes

The electro-chemical treatment of salts will necessitate a large use of electrical power; here again Nature aids the chemist, and the unique geographical position of the Dead Sea will be exploited. Already, under the direction of Mr. Rutenberg, the electrical engineer who has undertaken to electrify the Holy Land, a group is working on this task and is electrifying and irrigating the country by the otherwise useless waters of the Jordan. Under the scheme there will be available 100,000 horse power, which will amply answer the needs of Palestine. Within two years the Palestine Electric Corporation, Ltd., will complete the first electrical plant with a power of 20,000 horse-power.

The above figures are not introduced in such abundance to prove an academic hypothesis; they are intended to demonstrate the practicability as well as the economic possibilities of the exploitation of the Dead Sea. On the face of it, the figures would appear to indicate a profitable scheme, but from its being a possibility to its becoming a success there is an appreciable distance to traverse. Its success, as already stated, depends upon the two main and inseparable factors—transport facilities and the international market.

The Transport Problem

The Dead Sea is located at the very short distance of 80 kilometres from the Mediterranean coast; yet the transport there of the salts produced constitutes a serious problem. The port of Jaffa—if port it may be called—the Jaffa of Jonah fame, is by direct line the nearest point on the Mediterranean which could come into consideration for the transit of minerals from the Dead Sea. But the Government of Palestine has decided upon Haifa, which is seriously to rival earlier-established harbours in the north and south, as the future harbour of Palestine. It is to Haifa, therefore, that we have to turn in any discussion of the transport facilities which are to serve the products of the Dead Sea.

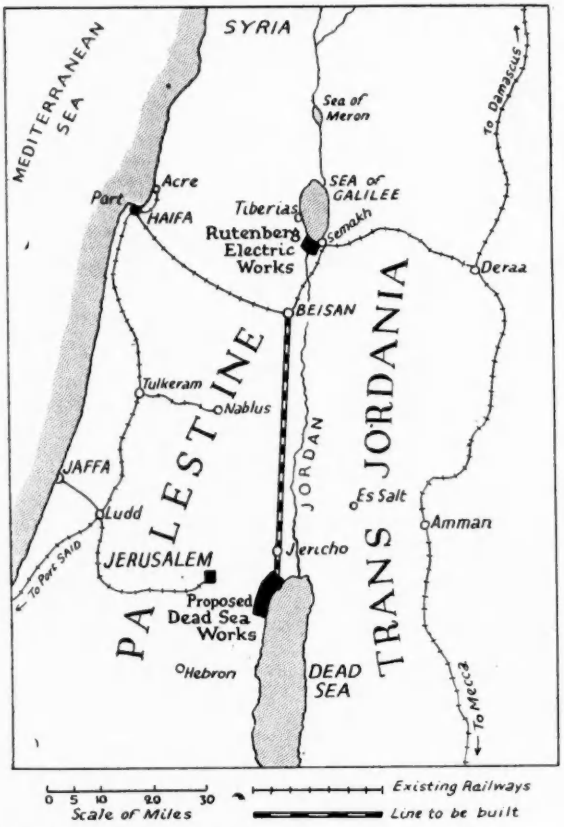
There are two separately-managed railway systems in Palestine; there is the Syrian line, Haifa-Beisan-Damascus, and the Egyptian line, which was built by the English troops largely during the war and runs from Haifa to Jaffa and Port Said, there meeting the lines of the world's most important junctions. This latter line has an important branch line linking it with the City of Jerusalem. Now Jerusalem itself is connected eastwards with the Dead Sea and the country east of the Jordan by an adequate motor road to Jericho and the Dead Sea. But any attempt to link the city by a railway is doomed to failure, as the Dead Sea is at such a low depression, while Jerusalem is on the hills at an elevation of 2,600-3,000 feet above the sea level.

Hence the authorities in Palestine have decided upon a railway to link the Dead Sea area with Beisan; an up-river railway line, which will run parallel to the Jordan. Its length will be 84 kilometres only, while its estimated cost is about £600,000. The line will then be linked with the Syrian system. When the harbour at Haifa has been constructed, the problem of transport to the Mediterranean will have been solved. The immense output will be carried in specially prepared trucks on the railway to Beisan, and might be loaded on the same day into great liners waiting in the Haifa harbour. There will be berthing facilities here for some of the largest Transatlantic liners in the world, and the size of the harbour is expected to be three and a half times that of Beirout, its serious and well-established rival in the north. But transport, and particularly local transport, is not everything required to make the scheme a success; it is only the first part of the translation of the great scheme into reality.

International market conditions are the more important factors which will determine the success or otherwise of the Dead Sea scheme; to them, and to them only, will the investor

turn for enlightenment as to whether or not investment will be justified, or whether, despite the apparent promise of the scheme, he is putting his money on the wrong horse. Yet market conditions alone, with their perennial fluctuation and dependence upon a hundred and one economic and political factors, would appear to offer a doubtful guide in a discussion of this kind.

Before the war the potassium monopoly was in the hands of Germany, and since the war, under a Franco-German agreement, Germany is to furnish two-thirds of the world's requirements in potash, while France will furnish the remaining third. When we remember that the mines of Alsace and of Stassfurt are sufficient, and more than sufficient, to supply the world's requirements for another few centuries, it becomes clear



MAP ILLUSTRATING SUGGESTED METHODS OF TRANSPORTING THE PRODUCTS OF THE DEAD SEA

that the Palestine scheme will have to embark upon a doubly difficult task. It must either seek new markets, or, which is no less difficult, compete with products of established reputation. In the writer's opinion, Palestine will be able to do both, as the following examination bears out.

A Calculation

In 1925 the United States imported 240,000 tons of pure potassium chloride, valued at £10 a ton on exportation from Germany and £14 on receipt in New York. It has been calculated that the price of a ton of potassium chloride will be £1 at the Dead Sea, and allowing the large margin of £7 for transport expenses to New York, we arrive at the figure of £8 per ton upon arrival in New York. Prophecies and advance calculations are admittedly dangerous ground on which to discuss economic possibilities; but production costs at the Dead Sea should be considerably lower than those elsewhere, which will make the product a serious rival to the Franco-German output.

The question of sale in the first years of production, when the total output will not exceed 100,000 tons of pure potash, will not be a very serious factor in the economic discussion of the scheme as a whole. For that relatively small output will be easily absorbed by the neighbouring countries. But it will not be as easily solved with the increase of the output, especially when the production has reached the million ton mark. It will be then that Palestine will find it wasteful to direct its efforts solely towards competition with the German-French products, and will have to turn its attention to procuring fresh markets. The authorities responsible for the welfare and prosperity of the Holy Land will have to "sell" the idea of fertilisers to future and prospective markets, with intensive propaganda for which there is still a large field; suffice it to mention Mesopotamia, a neighbouring country of great fertility in the past and with potentialities for the future. Like Palestine, Mesopotamia has suffered centuries of neglect and desolation, and is a land which will need every possible encouragement for the promotion of its agriculture. The potash of the Dead Sea will therefore be a welcome stimulant.

The exploitation of the Dead Sea is an inseparable link in the great chain of Imperial undertakings, and an important page in the upbuilding of Palestine by the Jewish people.

Judgment by Anglo-German Tribunal

Case Regarding Gas Engine

THE Anglo-German Mixed Arbitral Tribunal ("B" Division), the court comprising Mr. E. Sandstrom, president, Mr. Gleeson E. Robinson, British member, and Dr. R. Wendriner, German member, issued through the Secretariat, on June 12, their decision in the case of Ehrhardt and Sehmer A.G. (creditors), against Albright and Wilson, Ltd., chemical manufacturers (debtors). The hearing of this case was reported in THE CHEMICAL AGE of May 4, p. 427. The case concerned the sale of a gas engine by Ehrhardt and Sehmer A.G. to the British firm.

The decision was as follows:—*En résumé*, the creditors had not produced the proof incumbent on them that the deficiency in the output of the engine was due to circumstances for which they were not responsible. The claim for the last instalment of the purchase price was therefore not justified As to the rest of the claim, it depended on the issue of the counter-claim made by the debtors.

As to this counter-claim, it was true that a piston and a cylinder cover cracked during the special periods of guarantee stipulated in the contract. It had, however, to be shown to the satisfaction of the Tribunal that the defects were due to inferior construction or design or faulty material. In normal circumstances there would have been a presumption to this effect, but in view of the facts that the creditors had not themselves been able to complete the erection and start the engine, and that also new pistons supplied by another firm cracked time after time, the presumption did not hold good. It was impossible to ascribe the defects to any definite cause, and the uncertainty here operated against the debtors. They had not proved their counter-claim, and an award had therefore to be made for the part of the claim exceeding the last instalment of the purchase price, viz., £576 17s. 8d.

The Tribunal adjudged that there was a debt within the meaning of Article 296 of the Treaty of Versailles, £576 17s. 8d., due from the debtors to the creditors, and directed that this sum should be credited by the British Clearing Office to the German Clearing Office, together with interest thereon at the rate of 5 per cent. per annum from September 1, 1915, up to the date of crediting.

The Tribunal made no order as to costs.

Memorial to Dr. James Young

A MEMORIAL to Dr. James Young—who some 80 years ago investigated methods of low temperature coal distillation—was unveiled on Friday, June 14, at the Bussey low temperature plant, Begoin, near Glasgow. The new Bussey plant is not far from the site of Dr. Young's original plant. Visitors from all over Britain attended, and there were about 25 direct descendants of Dr. Young present. The Lord Provost of Glasgow, Sir David Mason, said that Young, who was the son of a working joiner, was born in Glasgow in 1811. After the unveiling of the memorial tablet by Mr. H. M. Cadell, of the Royal Society of Edinburgh, the Rev. Gunson Sherwood stated that the new Bussey plant would provide work for 2,000 people.

Chemical Trade Returns for May

Steady and Favourable Development

THE Board of Trade Returns for May indicate that imports of chemicals, drugs, dyes and colours for the month ended May 31, 1929, were valued at £1,342,387, an increase on the corresponding period of 1928 of £35,933; exports were valued at £2,457,061, an increase of £98,485; and re-exports £70,062, a decrease of £20,172. For the five months ended May 31, 1929, imports were valued at £6,721,180, an increase of £28,034; exports at £10,899,461, an increase of £259,069; and re-exports at £361,561, a decrease of £43,985. Details are as follows:—

Imports

	Quantities Month ended May 31,		Value Month ended May 31,	
CHEMICAL MANUFACTURES AND PRODUCTS—	1928.	1929.	1928.	1929.
			£	£
Acid Acetic .....tons	1,316	1,015	59,779	38,093
Acid Tartaric.....cwt.	2,683	3,542	17,487	24,682
Bleaching Materials ,,	10,107	9,357	8,135	9,116
Borax ..... ,,	8,321	14,770	7,230	10,517
Calcium Carbide .. ,,	61,018	94,531	37,085	58,104
Coal Tar Products Value	—	—	74,442	96,034
Glycerine, Crude ..cwt.	116	146	338	334
Glycerine, Distilled. ,,	1,456	1,191	5,929	2,966
Red Lead and Orange Lead ..... cwt.	4,450	3,459	6,304	5,132
Nickel Oxide.. .... ,,	—	—	—	—
Potassium Nitrate . ,,	8,021	10,251	8,283	10,328
Other Potassium Compounds.....cwt.	192,526	234,072	69,713	75,511
Sodium Nitrate ... ,,	93,333	74,984	55,569	38,736
Other Sodium Compounds.....cwt.	44,285	39,829	26,956	26,045
Tartar, Cream of .. ,,	4,713	3,432	21,010	15,387
Zinc Oxide ..... tons	1,072	1,120	33,039	33,753
All other Sorts ...value	—	—	285,109	336,896
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	87,615	101,514	6,459	7,508
Bark Cinchona, etc. cwt.	1,810	839	8,931	4,351
Other Sorts .....Value	—	—	124,024	134,260
DYES AND DYESTUFFS, ETC.—				
Intermediate Coal Tar Products ..... cwt.	104	107	826	1,882
Alizarine ..... ,,	22	158	819	4,467
Indigo, Synthetic .. ,,	—	—	—	—
Other Sorts ..... ,,	3,171	4,441	75,797	91,137
Cutch ..... ,,	3,432	3,453	6,239	5,903
Other Dyeing Extracts cwt.	6,631	3,423	22,647	10,885
Indigo, Natural .... ,,	—	31	—	950
Extracts for Tanning ,,	134,657	86,833	150,206	95,652
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, and Blanc Fixe ..... cwt.	55,083	54,189	12,125	12,787
White Lead (dry) . ,,	17,478	13,463	27,116	22,994
All other Sorts .... ,,	181,473	109,107	154,851	167,977
Total of Chemicals, Drugs, Dyes, and Colours ....value	—	—	1,306,454	1,342,387

Exports

	Quantities Month ended May 31,		Value Month ended May 31,	
CHEMICAL MANUFACTURES AND PRODUCTS—	1928.	1929.	1928.	1929.
			£	£
Acid Sulphuric ....cwt.	7,516	7,782	2,987	3,668
Acid Tartaric ..... ,,	2,210	1,278	14,815	8,773
Ammonium Chloride tons	296	217	6,834	5,261
Ammonium Sulphate—				
To Spain and Canaries tons	9,338	3,288	94,965	33,174
,, Italy ..... ,,	94	535	957	5,112
,, Dutch East Indies tons	673	1,182	7,130	12,525
,, Japan ..... ,,	6,596	14,710	69,275	151,163
,, British West India Islands and British Guiana tons	2,542	2,427	25,675	24,828
,, Other Countries ,,	8,429	11,587	88,590	121,278
Total .... ,,	27,672	33,729	286,592	348,080
Powder, Bleaching (Chloride of Lime) ..... cwt.	63,435	66,421	22,155	18,679
COAL TAR PRODUCTS—				
Anthracene .....cwt.	—	—	—	—
Benzol and Toluol .gall.	543,730	937,405	29,909	66,743
Carbolic Acid ..... cwt.	21,955	19,356	38,985	30,576
Naphtha .....gall.	10,242	8,435	718	750
Naphthalene (excluding Naphthalene Oil) cwt.	4,970	9,222	2,525	3,647
Tar Oil, Creosote Oil, etc. gall.	7,665,139	2,962,355	283,499	86,397
Other Sorts .....cwt.	107,718	24,727	49,119	14,144
Total ...value	—	—	404,755	202,257
Copper, Sulphate of ..tons	4,137	3,014	97,681	81,723
Disinfectants, etc. ... cwt.	20,028	41,235	76,483	100,218
Glycerine, Crude .... ,,	2,085	4,841	6,296	6,134
Glycerine, Distilled .. ,,	10,463	8,540	35,735	21,608
Total .... ,,	12,548	13,381	42,031	27,742
POTASSIUM COMPOUNDS—				
Chromate and Bi-Chromate ..... cwt.	2,059	1,844	3,849	3,820
Nitrate (Saltpetre) .. ,,	1,922	1,278	3,679	2,444
All other Sorts..... ,,	4,708	4,004	13,474	16,248
Total .... ,,	8,689	7,126	21,002	22,512
SODIUM COMPOUNDS—				
Carbonate, Soda Ash and Bicarbonate .... cwt.	468,028	470,376	126,828	142,780
Caustic ..... ,,	209,118	246,243	134,990	161,098
Chromate and Bi-chromate ..... cwt.	3,183	3,899	4,409	6,695
Sulphate, including Salt Cake .....cwt.	42,520	264,840	5,780	28,237
All Other Sorts .... ,,	63,317	73,881	81,511	90,924
Total .... ,,	786,166	1,059,239	353,518	429,734
Zinc Oxide ..... tons	97	172	4,004	6,106
Chemical Manufactures, etc., all other sorts value	—	—	334,172	346,665
Total of Chemical Manufactures and Products ..value	—	—	1,667,029	1,601,418
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	193,347	182,715	19,056	18,377
All other Sorts ...value	—	—	243,574	305,319
Total .... ,,	—	—	262,630	323,696
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	9,698	16,641	76,705	108,512
Other Sorts ..... ,,	9,838	7,686	8,555	8,346
Total .... ,,	19,536	24,327	85,260	116,858
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, and Blanc Fixe ..... cwt.	3,409	4,614	1,785	2,335
White Lead (dry) .. ,,	7,306	4,951	12,780	9,904
Paints and Colours in paste form .....cwt.	42,263	50,906	86,930	111,387
Paints and Enamels Prepared (including Ready Mixed) .....cwt.	40,616	56,933	130,716	182,190
All other Sorts .... ,,	56,028	67,080	111,446	109,273
Total .... ,,	149,622	184,484	343,657	415,089
Total of Chemicals, Drugs, Dyes and Colours ..... value	—	—	2,358,576	2,457,061

Re-Exports

	Quantities Month ended May 31, 1928.	Quantities Month ended May 31, 1929.	Value Month ended May 31, 1928.	Value Month ended May 31, 1929.
CHEMICAL MANUFACTURES AND PRODUCTS—			£	£
Acid Tartaric.....cwt.	92	142	767	1,184
Borax ..... ,,	30	20	26	15
Coal Tar Products.value	—	—	8	31
Potassium Nitrate .cwt.	3,153	91	2,816	135
Sodium Nitrate ... ,,	1,040	2,783	568	1,494
Tartar, Cream of .. ,,	493	574	2,251	2,814
All other Sorts....value	—	—	26,560	17,807
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts ..... oz.	21,552	7,597	2,318	671
Bark Cinchona, etc. cwt.	719	344	4,996	2,661
All other Sorts ..value	—	—	35,500	32,328
DYES AND DYESTUFFS—				
Cutch ..... cwt.	1,501	1,888	2,755	3,274
Other Dyeing Extracts cwt.	143	227	1,583	1,868
Indigo, Natural ... ,,	5	2	118	36
Extracts for Tanning ,,	467	1,130	649	1,259
PAINTERS' COLOURS AND MATERIALS.....cwt.	1,889	1,008	7,008	3,925
Total of Chemicals, Drugs, Dyes and Colours .. value	—	—	90,234	70,062

I.C.I. New Research Station

Details of the Opening Ceremony

THE new Agricultural Research Station of Imperial Chemical Industries, Ltd., at Jealott's Hill (Warfield, Berks) will be formally opened by the Rt. Hon. J. H. Thomas, M.P. (Lord Privy Seal) on Friday, June 28. Among those present will be Lord Melchett, Mr. L. S. Amery, the Prime Minister of Egypt, Dr. Bosch, Dr. Bueb, Sir Harry McGowan, the Marquis of Reading, the Earl of Birkenhead, Lord Weir, Lord Colwyn, Sir Max Muspratt, Mr. J. Rogers, Mr. B. E. Todhunter, Mr. J. H. Wadsworth, Colonel G. P. Pollitt, Mr. J. G. Nicholson, the Hon. Henry Mond, Mr. H. A. Mitchell, Sir A. D. Hall, Sir Frederick Keeble, Sir David Milne-Watson, and agricultural experts from all over Britain. Speeches will be delivered by Lord Melchett, Mr. J. H. Thomas, Sir David Milne-Watson, Sir Frederick Keeble, Sir Harry McGowan, Lord Reading, Mr. John Garton, Sir Daniel Hall and Lord Birkenhead.

The new research station is the finest of its kind in the world. It comprises two farms, Jealott's Hill and Nuptown. The acreage of the former is 360, of which 160 is under the plough; the latter consists of a grass holding of 76 acres. The estate is thirty miles from London on the south of the Thames, midway between Windsor and Wokingham.

The Jealott's Hill Station is the new research headquarters of Nitram, Ltd., the distributive and research organisation for the farm fertilisers side of Imperial Chemical Industries. It will be the centre of farm research, not only for the United Kingdom, but for the whole of the Empire. It will thus be both complementary to the manufacturing side of Imperial Chemical Industries activities, as represented by the great factory at Billingham-on-Tees, and also a centre of the vast organisation for farm research which extends throughout the Empire and, indeed, throughout the whole world. The new station will make possible a much greater degree of co-ordination in this valuable work.

Laboratory and Large-Scale Work Combined

The Research Station, of course, is equipped with magnificent laboratories for analytical work of all kinds, such as the examination of soil and fertilisers, and for research into such subjects as animal nutrition, biochemistry, botany, plant physiology, bacteriology, and general microbiology. The laboratories and office buildings comprise an optical and photographic dark room, a sterilising room, a machinery and preparation room, library and conference room, staff common room, kitchens, etc. At the laboratories there will be displayed both apparatus and equipment used for the investigation of soils, fertilisers, crops, etc., and also special demonstrations of some of the methods used in testing soils. There will also be a cinematograph display illustrating the intensive system of grassland management.

After the opening ceremony, visitors will be able to inspect any of the many research activities of the station. The experiments themselves will be explained by special demonstrators.

Of special interest will be the smallholding dairy trial, which is a trial on a 17 acre field, managed as if it were a separate unit detached from the rest of the estate. Here will be shown how a smallholder, by proper management and the judicious use of fertilisers, may carry a large herd of stock on a small area and make a living out of his holding. There will also be open for inspection the latest experimental machinery for the cutting, collecting, and drying of grass and for the manufacture of grass-cake, specimens of which will be on view.

Another interesting demonstration will be an extensive experiment with sheep to determine the digestibility of grass which has been manured with nitrogen, and to prove its high nutritive value for fattening purposes. A wide range of experiments to prove the efficient and economical use of British-produced fertilisers is being carried out on the cereal and root crops of the farm.

Nuptown, a grass farm of 70 acres, has been set aside entirely for valuable trials on the production of "baby beef." This farm, and the animals on it, will be of very striking interest to the graziers. An interesting item at Nuptown is the covered cattle-yard, of novel design, which provides an excellent demonstration of the latest ideas in practical construction and utility.

Also on view will be the latest designs for modern cowsheds. At the artificial manure shed will be displayed samples of all types of British-produced fertilisers, manufactured by Imperial Chemical Industries, Ltd. At the greenhouses will be shown simple demonstrations of the effect of different fertilisers on the growth of all manner of crops.

Chemistry at the British Association

AT this year's meeting of the British Association for the Advancement of Science, which will be held in South Africa in the period July 22–August 5, Professor G. Barger, F.R.S., of the University of Edinburgh, will preside over the chemistry section. His presidential address, which will be delivered in Cape Town on July 23, will deal with "The Relation of Organic Chemistry to Biology." Among other items the programme of the chemistry section includes a paper by Professor B. de St. J. van der Riet on "Essential Oils from South African Plants"; a paper on "Recently Discovered Nitrate Deposits in South-west Africa," by Professor J. Smeath Thomas; a discussion on "Vitamins"; a paper on "The Vegetable Tannins," by Professor K. Freudenberg; a paper on "The Chemistry of Gold Extraction," by Mr. H. A. White; a paper on "The Influence of Antiknocks on the Combustion of Hydrocarbons," by Mr. A. C. G. Egerton; and a discussion on "Quantitative Chemical Analysis by X-rays and its Applications." The president of the Association is Sir Thomas Holland, whose address will deal with "The International Relationship of Minerals."

Nobel Chemical Finishes at the Aero Exhibition

NOBEL CHEMICAL FINISHES, LTD., will be exhibiting (Stand 44) at the International Aero Show at Olympia, London, July 16-27, and as far as possible will show the uses of their finishes on actual aeroplane parts. For instance, there will be metal instruments, propellers, portions of fabric, duralumin and aluminium, and also engine cowls and radiators, etc., on exhibition, all finished in the materials this firm have to offer for these special purposes. Of particular interest will be the Nobel doping schemes for the protection of the fabric used for aeroplane wings, and the "Belco" enamels for use in the construction of all-metal aircraft. One exhibit on the stand will show a doping scheme which has been used on the new airship R.100. Nobel Chemical Finishes, Ltd., supplied all the dope for protecting the outside fabric of this new airship and also various cements and enamels called for in the decoration and protection of the ship. This stand will show not only cellulose finishes, but a number of oil and stoving finishes, etc., which often offer a method of finishing alternative to cellulose.

The General Chemical Council

To the Editor of THE CHEMICAL AGE.

SIR,—The suggested constitution of a General Chemical Council has already been considered by the Registration Committee of the British Association of Chemists, and although the time has not arrived to decide matters of detail there are some considerations regarding its *personnel* which it may be of interest to discuss.

It is not commonly known that the constitution of the General Medical Council allows for the representation of some laymen, although none, I believe, have been elected for many years. It is interesting to consider if the chemical profession would be well advised to follow this example.

Quite definitely, the General Chemical Council will be a body unique in function, if not in constitution. It will represent no society, and will be controlled by none. It will be concerned with the profession of chemistry and not with chemical science. It will look for support not only to the profession but to the public whose confidence it must necessarily win. It is thus obvious that very careful consideration of the matter of representation is necessary.

Hard saying though it is, it is certainly true that a council composed of representatives drawn only from among those of the scientific societies would not be greeted with an overwhelming vote of confidence. To begin with, in the profession itself there exist chemists of great ability whom, by their own choice, no society represents. What is true of the exceptional cases is also true of no insignificant minority of the rank and file who would nevertheless welcome a united profession and a recognised status for it. For this reason or that, they will have none of the societies, and the fact that this may be their loss does nothing to solve the problem. The General Chemical Council must represent all or none, so that even within the profession itself it will be necessary to look further afield than the existing societies.

And perhaps further afield still. Such examples of administration by academically trained chemists, deservedly eminent in their profession, as are available hardly invite confidence in their ability, theoretical or practical, outside the problems of chemical science. There are exceptions, but they are rare.

We are thus confronted by the problem of the layman, of introducing that element into professional administration which will leaven the academic point of view. The difficulty, however, is not insuperable. Only in a limited sense is it true that no chemist is an administrator, but in developing administrative faculties he ceases to be a chemist. He is outside the societies, outside the professional round, but his professional sympathies remain.

Just as it has been possible for the employers' federations to obtain voluntary support, so it should be practicable, if for a somewhat different reason, to obtain this type of representative for the General Chemical Council. Since it will have to deal with industry, the Council from the first must be a business, as distinct from a money-making proposition. It cannot emulate the scientific bodies and succeed.—I am, etc.,

HENRY T. F. RHODES.
Editor, *The Chemical Practitioner*.
" Empire House," 175, Piccadilly, W.1.

Death of Professor Moureu

WE regret to announce the death of Dr. C. L. F. Moureu, the eminent French chemist. Born in 1863, he had been for the last 12 years professor of organic chemistry in the Collège de France, and was a past president of the International Union of Pure and Applied Chemistry. Among his published works were *Notions Fondamentales de Chimie Organique* and *La Chimie et la Guerre*, as well as numerous original papers on organic and other branches of chemistry. He rendered important service during the war.

British-American Tin Corporation

THE BRITISH-AMERICAN TIN CORPORATION, LTD., with a capital of £1,000,000, was registered on Friday, June 14, the eight subscribers representing large interests in Asia, Africa and America. The objects are to buy, sell, prepare, make merchantable, operate and deal in tin and other metals and minerals, and to carry on the business of miners, explorers, financiers, etc.

Lautaro-Anglo-Chilean Agreement

Details of Terms

THE terms of the agreement between the Lautaro Nitrate Co. and the Anglo-Chilean Consolidated Nitrate Corporation indicate that arrangements have been made with the Anglo-Chilean to construct a new Guggenheim process plant of about 540,000 tons capacity, and the money necessary for the erection of the plant and the provision of working capital for the additional production is being raised by the sale to the National City Co. of New York of $32,000,000 of six per cent. Lautaro bonds, to be secured by a first mortgage on the plant and new lands. It is claimed that the quantity of nitrate recoverable by means of the Guggenheim process is 100 per cent. more, while the cost is 40 per cent. less than under the process hitherto used. It is proposed to convert the present 1,600,000 £5 shares of Lautaro into seven per cent. cumulative preferred shares of £5, which will be redeemable at £5 10s. and will have the benefit of certain amortisation provisions. The plan also includes the creation of 2,000,000 new 1s. ordinary shares, which will be subscribed by a new company, Lautaro Nitrate Corporation, to be incorporated in Delaware, U.S.A. This company in turn will issue 4,000,000 no par value shares, of which 320,000 are to be distributed among present Lautaro holders in the ratio of one share for each five shares held. The remaining shares will go to the Anglo-Chilean Corporation, which will hold over 50 per cent. of the shares of the Delaware company, to the bankers, and to Baburizza Lukinovic and Co. for the cancellation of certain contracts and the transfer of certain properties.

Position of Guggenheim Brothers

Members of the firm of Guggenheim Brothers own more than 50 per cent. of the shares of the Anglo-Chilean, and several members of the firm will join the Lautaro board. In addition, the research, operating and distributing organisation of Guggenheim Bros. will be available for the Lautaro company. In the prospectus relating to the new Lautaro bonds, it is estimated that on completion of the new plant the net earnings of the Lautaro company after depreciation and depletion, but before interest, will be about £2,750,000 per annum, which after allowing for bond interest, preferred dividend, and U.S. income tax, should leave a balance of $1·66 for each Delaware company share. The local board in Chile also recommend two dividends of 3s. each on the present Lautaro shares, other than " A," " B " and " C " shares, one payable on the adoption of the plan and the other on December 31 next. The recommendation is conditional upon shareholders' approval of the scheme, and the necessary meetings will be held late in the summer.

Copyright of Industrial Designs

AT the tenth annual meeting of the Trade Marks, Patents, and Designs Federation, Ltd., Mr. John McDowell (Lever Brothers, Ltd.) was elected president and Mr. Kenneth Lee (Tootal Broadhurst Lee Co., Ltd.) vice-president. The question of the protection of industrial designs has been engaging the consideration of the federation, more especially in view of the congress of the International Chamber of Commerce to be held in Amsterdam next month, at which the subject is likely to be discussed. This question is of special importance to textile, wallpaper, linoleum and other manufacturers. France has been advocating the establishment of an international system of protection of designs used in industry on the basis of copyright, but divergence of opinion has manifested itself among British manufacturers. The subject is one which is likely to provoke keen discussion in the near future, comprising as it does a comparison of the domestic outlook with the international aspect. The following companies are represented on the council of the federation:—Lever Brothers, Ltd., Tootal Broadhurst Lee Co., Ltd., Bass, Ratcliff, and Gretton, Ltd., Arthur Guinness, Son, and Co., Ltd., Allsopps, Ltd., J. and P. Coats, Ltd., Courtaulds, Ltd., Imperial Chemical Industries, British-American Tobacco Co., Ltd., and Bradford Dyers' Association, Ltd.

New Salford City Analyst

MR. HAROLD E. MONK, honorary secretary of the Liverpool section of the Institute of Chemistry, and one of the senior members of the Liverpool city analyst's staff, has been appointed city analyst of Salford.

Reviews

AMERICAN SOAP MAKER'S GUIDE. By I. V. Stanley Stanislaus and P. B. Meerbott. London: Chapman and Hall. Pp. 709. 50s.

This very useful volume, which forms a complete practical treatise on soap-making, commences with a short historical survey. It then deals with the raw materials, the production of manifold varieties of soap, the use of various machines, and the analytical control of soaps and other bodies mentioned. The practical part actually concerned with soap-making, which forms but a small portion of the book, is very well written. It is quite immaterial that the authors occasionally revert to measuring the material in pails, as this method of treatment enables them to bring home their points with great effect. The description of the machinery, which is profusely illustrated, is less fortunate. In their anxiety to give as much information as possible, the authors include descriptions which are so patchy as to be quite useless. For example, on page 289, a crutcher is illustrated about which we learn that it has an iron valve 5 by 7 ins., and is driven by a ten horse-power engine, but the size or capacity of the crutcher are entirely forgotten. Another fault of the illustrations is that most of them are reproduced in half-tone blocks which are frequently so dark that the working method of the machines cannot be grasped.

The book gives a deep insight into many processes of soap-making; it illustrates faults; it gives the procedure to be adopted with different kinds of oils and fats; it shows the variations to be expected and gives examples of the manner in which troubles may be overcome. In this respect it is a distinct improvement upon the many text books which supply stereotyped methods of manufacture which only too often fail in practice. In regard to the analytical part of the book, this is on about the same level as many other text books, and in parts not so exhaustive as most English books. For example, the Reichert-Meissl method is given without details of the apparatus; these are known to be very important. The spelling of the book is American, as also the language. In spite of the faults which have been pointed out, in the hope of serving alike the authors and the reading public, the reviewer considers the book good value for the money. S. P. S.

EVERY INVENTOR HIS OWN PATENT AGENT. By W. H. Baraclough. London: Effingham Wilson. Pp. 418. 20s.

This book is intended to provide the inventor and manufacturer with information in non-technical and non-legal language, which will enable them to dispense with professional assistance in obtaining a patent and in protecting their interests in the patent in all matters relating to it. The procedure adopted in the examination of specifications and grant of patents by the Patent Office is discussed, and much good advice is given to the inventor to assist him in obtaining the fullest protection for his invention. If he wants to protect it in foreign countries, he will find a section giving some information about fees and requirements in other countries. Some typical British specifications are printed as a guide, and full information is given as to forms and fees. The commercial aspect is also dealt with, and the inventor is given good advice regarding infringements, assignments, mortgages, licences, contracts, and oppositions. The law relating to designs, and their relation to patents, is explained.

The book is not free from ambiguities and misstatements, such as that on page 51, where it is stated that "protection commences from the day when the application has been formally accepted"—a clear divergence from Section 13 of the Patents Acts. It may be doubted whether the average inventor would ever plunge so deeply into the complexities of the law as to make full use of this book, or indeed, whether he would be wise to attempt to do so without seeking professional assistance. But there is undoubtedly scope for a book which makes possible a fuller understanding and more intelligent co-operation between the inventor or manufacturer and his patent agent. The large mass of information in this book is exceptionally fully indexed.

THE CONSTITUTION OF SUGARS. By W. N. Haworth, D.Sc., Ph.D., F.R.S. London: Edward Arnold and Co. Pp. 100. 8s. 6d.

Professor Haworth, who is well known for his work on the carbohydrates, is continuing with much success the classical researches of Emil Fischer and Sir James Irvine, and his little book, which is the outcome of lectures delivered in Zürich, Heidelberg, Neuchatel and Mulhouse, is a welcome addition to the literature. So much progress has been made in the chemistry of the carbohydrates during the last few years that a well-reasoned review, such as the one given us by Professor Haworth, must be welcome to every one interested in organic chemistry. Those who have followed the controversies in which Professor Haworth has been engaged of recent years will note with pleasure the moderate way in which they have been dealt with and the fairness with which the opposing opinions have been reviewed. This is the greatest compliment one can pay to a scientific worker and author who has worked under controversial circumstances.

The reviewer has read through *The Constitution of Sugars* with the greatest interest. It is fascinatingly written, and some of the most difficult points are both simply and clearly explained. The reviewer, who could have wished for more of Professor Haworth's deliberation, was therefore somewhat disappointed when he was from time to time faced with blank pages, which he felt the writer could have filled to advantage. This is, however, the only unfavourable impression gained, otherwise both Professor Haworth and his publisher can be congratulated most heartily. M. N.

COLLOID CHEMISTRY. VOL. II: BIOLOGY AND MEDICINE. Edited by Jerome Alexander. New York: The Chemical Catalog Co. Pp. 1029. $15.50.

The importance of colloid-chemical changes in the processes of life has long been recognised. The study of reactions in a living organism is very difficult, because it is almost impossible to separate one process from the rest. This volume contains 57 monographs, dealing with many aspects of biology and medicine. Mr. Alexander himself tackles the problem of the self-perpetuating and self-duplicating catalytic particle, *i.e.*, the primal living unit. Among other articles of more general interest one may mention "Plasmogeny" by Herrera; "Colloids and X-rays," by Sir W. Bragg; "Inorganic Ferments," by Bredig; "The Absorption of Enzymes," by Willstätter; "Filtrable Viruses," and "Electrophoresis of Bacteria," by Falk; the colloid chemistry of tuberculosis and cancer, etc. But perhaps it is somewhat invidious to pick out the above headings, as public interest is not necessarily a correct measure of the value of scientific work.

No efforts have been spared by the editor and the contributors to provide a really comprehensive survey of our present state of knowledge and trend of thought. The subject has been well considered from every possible angle as far as it can be fitted into a single volume. The book is well printed, and provided with a number of illustrations and graphs. It should prove of great value both for reference and as a source of inspiration and ideas for research workers on the subject. S. P. S.

DIE PARFUMERIEINDUSTRIE. By Alfred Wagner. Halle: Wilhelm Knapp. Pp. 596. 29 marks (in German).

The compounding of perfumes is a science and an art. Science classifies the perfumes and teaches how to fix and intensify their basic functions, and how to preserve their valuable properties. The art of perfumery is to combine odours in such a manner as to make the combination pleasing and delicate. This book deals in a very thorough manner, not only with the production of perfumes, but also with the manufacture and properties of the natural essential oils, factory operations and laboratory methods. Apart from this, the book contains large sections on tooth pastes, soaps and almost everything appertaining to the care and beauty of the skin, hair, etc. It is well written, but unfortunately, is marred by the inclusion of many formulæ made up with out-of-date German weights and measures. Nevertheless, it is a volume which will prove serviceable to those dealing with cosmetics and perfumery. S. P. S.

Principles of Professional Conduct

Code of the American Institute of Chemists

The April number of the "Journal of Chemical Education" gives an account of the principles of professional conduct to which the American Institute of Chemists subscribes. The account is reprinted below.

THE statement of the American Institute of Chemists is as follows: The profession of chemistry has become an increasingly important factor in the progress of civilisation and in the welfare of the community. Chemists are entitled to the position and authority which will enable them properly to discharge their responsibilities and render effective service to humanity. In order that the honour and dignity of the profession be advanced and maintained, the American Institute of Chemists has prepared the following code to define the rules of professional conduct and ethics, binding on its members.

1. Every individual on entering the profession of chemistry and thereby becoming entitled to full professional fellowship, incurs an obligation to advance the science and art of chemistry, to guard and uphold its high standard of honour, and to conform to the principles of professional conduct.

2. It is the duty of a chemist to bear his part in sustaining the laws, institutions, and burdens of his community.

3. The chemist shall not knowingly engage in illegal work or co-operate with those who are so engaged.

4. A chemist shall carry on his professional work and act in a strict spirit of fairness to employers, contractors and clients, and in a spirit of personal helpfulness and fraternity toward other members of the chemical profession.

5. He shall refrain from associating with or allowing the use of his name by any enterprise of questionable character.

6. He shall advertise only in a dignified manner, being careful to avoid misleading statements.

Publication

7. He shall co-operate in upbuilding the profession by exchanging general information and experience with his fellow chemists and by contributing to the work of technical societies and the technical press, where such information does not conflict with the interests of his client or employer. It is very desirable that the first publication regarding inventions or other scientific advances be made through the technical societies and technical publications and not through the public press. Care shall be taken that credit for technical work be attributed as far as possible to the real authors of the work.

8. If, in his opinion, work requested of him by clients or employers seems to present improbability of successful results, he shall so advise before undertaking the work.

9. He shall be conservative in all estimates, reports, testimony, etc., and especially so if these are in connection with the promotion of a business enterprise.

10. He shall not accept compensation, financial or otherwise, from more than one interested party without the consent of all parties concerned and shall not accept commissions from outside parties and sales to his client or employer without their knowledge. He is, however, in no way debarred from accepting employment from more than one employer where there is no conflict of interests.

11. He shall not use any unfair, improper or questionable methods of securing professional work or advancement and shall decline to pay or to accept commission for securing such work.

12. He may use all honourable means in competition to secure professional employment, but shall not, by unfair means, injure directly or indirectly, the professional reputation, prospects or business of a fellow chemist and shall not attempt to supplant a fellow chemist after definite steps have been taken toward the latter's employment.

13. He shall not knowingly accept employment by a client or employer while the claim for compensation or damage, or both, of a fellow chemist previously employed by the same client or employer and whose employment has been terminated, remains unsatisfied, or until such claim has been referred to arbitration or issue has been joined at law, or unless the chemist previously employed has neglected to press his claim legally.

14. He shall be diligent in exposing and opposing such errors and frauds as his special knowledge enables him to recognise.

15. Any infractions of these principles of professional conduct coming to his attention shall be reported to the Ethics Committee of the American Institute of Chemists.

Relations with Other Chemists

16. He shall not attempt to compete with a fellow chemist on the basis of professional charges by reducing his usual charges in order to underbid after being informed of the charges named by the competitor.

17. He shall not accept any engagement to review the professional work (except journal articles and similar scientific publications and in litigation) of a fellow chemist without the knowledge of such chemist or unless the connection of such chemist with the work has been terminated.

18. When undertaking work for a client or employer, he should enter into an agreement regarding the ownership of any and all data, plans, improvements, patents, designs or other records which he may develop or discover while in the employ of such a client or employer. In the absence of a written understanding the following principles are held to apply: (*a*) If a chemist uses information obtainable only from his client or employer which is not common knowledge or public property, any results in the form of designs, plans, inventions, processes, etc., shall be regarded as the property of the employer; (*b*) if a chemist uses his own knowledge or information or data which by prior publication or otherwise are public property, then the results in the form of designs, plans, inventions, processes, etc., remain the property of the chemist and the client or employer is entitled to their use only in the case for which the chemist was retained; (*c*) all work and results accomplished by the chemist outside of the field for which he was employed or retained are the property of the chemist; (*d*) special data or information obtained by a chemist from his client or employer or which he creates as a result of such information, are to be considered, and while it is ethical to use such data or information in his practice as forming part of his professional experience, its publication without permission is improper.

Fees

19. He shall as far as possible in consulting work fix fees at a point high enough to warrant complete and adequate service. Unreasonably low charges for professional work tend toward inferior and unreliable work. In fixing fees it is proper for him to consider: (*a*) The time and labour involved, the novelty and difficulty of the matter and the experience and skill necessary; (*b*) whether the employment precludes other employment on similar lines or will involve the loss of other business while engaging in the particular work; (*c*) customary charges of chemists for similar services; (*d*) the magnitude of the matter involved and the benefits resulting to the client from the service; (*e*) the character of the employment, whether casual or for an established and constant client.

20. While it is desirable that chemists engaged in teaching and research should be permitted to use their special knowledge and skill in direct service to individual clients, it is prejudicial to the welfare of the profession for such services to be rendered at rates which ignore the ordinary costs of equipment, supplies, and overhead expenses.

21. Having established a fair fee and billed same to a client, he should oppose any effort of a client to have such fee reduced without real and sufficient cause. Wherever compatible with self-respect and the right to receive a reasonable recompense for services rendered, controversies with clients regarding compensation are to be avoided. There should, however, be no hesitation to apply to the courts for redress to prevent injustice, imposition, or fraud.

Pyrites and Pyrites Cinders in Italy

IRON and copper pyrites production in Italy during 1928 totalled 552,430 tons. Of this the Montecatini output was 441,187 tons, or 80 per cent. of the national production. This decrease of about 11,000 tons from the 1927 output by the Montecatini resulted from the agricultural depression. The production of pyrites cinders was 69,478 tons, and briquettes 48,875 tons.

The Value of a Written Testimonial

By a Chemical Correspondent

WHY is it that some firms make it a rule never to give written testimonials to employees who are leaving, while others invariably accede to such a request? Why is it that some firms always ask for testimonials when engaging a new employee, while others will not look at them even if they are proffered?

For years there have been suggestions in favour of compelling firms to give written testimonials to departing employees, but even if all firms were compelled, it is doubtful whether the recipient would gain any real advantage. For a testimonial obtained under compulsion would simply take the form of a leaving certificate: it would state that the person named had been employed by the firm for a specified period in a given capacity, that he had performed his duties in a satisfactory manner, and then give the reason for leaving. There would be no really personal appreciation of the services and abilities of the departing employee, such as would appear in the spontaneous testimonial, and it would therefore be nothing more than an official confirmation of the verbal statement made by the person when applying for employment elsewhere.

Such a testimonial would give no indication of the fitness of the individual for the position applied for, and so would fail to advance his cause. A testimonial worded in the following manner, for example, would not be of great value to the recipient, in his attempts to secure other employment:—"Mr. —— has been in our employ from March, 1925, to May, 1928, as charge hand in our assembling shop. For further particulars apply to Department No. 5." A certificate on such lines is actually given to each member of the staff, upon departure, by one firm, and the only point elucidated is that the man did hold a certain position with the firm for a specified time.

Appreciation

In some cases, however, this firm contrived to insert a little appreciation, which considerably enhanced the value of the document. At the foot of one of these certificates appeared the following, "Mr. —— is leaving of his own accord, in order to improve his position, and he has our best wishes for his future success." It was apparent from this that the man had given satisfaction, and that his services were appreciated, a fact that would not be lost sight of by a prospective employer. The certificate could, therefore, be regarded as a testimonial, and would be of value.

It is sometimes the case that when a man is about to leave the firm by whom he has been employed for some time, relations become somewhat strained between him and his immediate chief, and in these circumstances it is difficult for the latter to pay ungrudging tribute to his subordinate. In one works the manager and a prominent member of his staff had heated words over a certain matter, and in a fit of anger the subordinate sent in his resignation, which was promptly accepted by the manager. When anger had cooled, both began to realise that they had been precipitate, but pride stood in the way of a reconciliation, and a feeling of soreness prevailed. On the day of his departure the man asked the manager for a written testimonial, and the request was complied with. The effusion was, however, a very lukewarm affair, and was not at all in accordance with the expectations of the recipient.

In another case the man was young and ambitious, and the manager had plans concerning his future. The man was unaware of this, and, feeling that he was not getting on fast enough, applied for and secured a better position with another firm, and then handed in his resignation. The manager was very wroth, and definitely refused to give a written testimonial, telling the man that he would answer any inquiry from the new firm.

A testimonial, to be of real value, should embody a definite recommendation, and the reason why many firms set no store upon testimonials is because so few of them contain any recommendation. Why this should be so is a question yet to be answered, but it may be that firms are averse to committing themselves, in case things go wrong. But, after all, a firm need do no more than testify to the man's ability to do justice to a position similar to the one he is vacating.

There is one aspect of the case which, perhaps, has not received the attention it deserves. The written testimonial is definite evidence of goodwill toward the departing employee on the part of the firm, whereas the absence of a testimonial creates an element of doubt. The man knows that, when applying for work elsewhere, he will have to give the names of previous employers, and that there is a strong probability that one or more of these will be asked to supply particulars of his services. If he has a written testimonial he is sure of his ground, for his previous employers cannot contradict a statement they have already made in writing, but if there is no testimonial he cannot tell whether the result of the inquiry will be favourable or not.

If, after interviews with various firms, he fails to secure employment, he will come to the conclusion that his previous employers have given an unfavourable report, and this makes him bitter. This is exemplified in the case of a man who, leaving his employment after a difference with the manager, failed for a long time to secure other employment. He attributed this to the hostility of his late manager. As a matter of fact, the manager only received two inquiries, and in each instance he sent a most favourable reply, extolling the merits of the man, and recommending him for the positions concerned. It is easy to see that a misconception can arise in the mind of a disappointed man, and if only to avoid this, it is well for any firm to give a written testimonial when requested, assuming, of course, that the facts warrant it.

China Clay Exports—May, 1929

A RETURN showing the quantities and value of the exports of China Clay, including Cornish or China Stone, the produce of Great Britain and Northern Ireland, as registered in the month of May, 1929, is as follows:—

COUNTRY OF DESTINATION	QUANTITY. Tons.	VALUE. £
Finland	597	1,605
Estonia	300	490
Latvia	582	1,004
Sweden	2,462	4,790
Norway	197	300
Denmark	2	16
Germany	7,951	18,165
Netherlands	4,147	9,732
Belgium	7,210	14,145
France	3,419	6,560
Portugal	1,640	2,753
Spain	1,774	3,737
Italy	2,111	4,435
Greece	15	90
China	5	39
Japan	20	256
United States of America	43,670	96,146
Mexico	5	23
Colombia	6	27
Peru	5	27
Chile	10	48
Irish Free State	8	27
Union of South Africa	2	9
British India, via Bombay	5,809	16,957
Via Bengal, Assam, Bihar and Orissa	—	4
Via Burmah	—	1
Australia	—	6
New Zealand	—	2
Canada	207	859
Newfoundland and Coast of Labrador	2,021	3,028
Total	84,175	185,881

China Clay Imports, May, 1929

A RETURN showing the quantities and value of China Clay, including China Stone, imported into Great Britain and Northern Ireland, as registered in the month of May, is as follows:—

COUNTRIES WHENCE CONSIGNED.	QUANTITIES. Tons.	VALUE. £
Germany	17	170
U.S. America	37	174
Cuba	—	5
Total	54	349

Oil from Coal

Interesting Paper by Professor Nash

An important conference was held in Birmingham on Thursday, June 13, by the National Lubricating Oil and Grease Federation, Mr. W. H. Howe (president) being in the chair.

The president, in the course of an interesting address on the work and objects of the Federation, pointed out that it was a matter for satisfaction that there were in the Federation members who represented a fairly good proportion of the trade in England and Wales. As the movement gained strength they were hopeful that it would be possible to carry out reforms for their mutual benefit, and it seemed to him that the present time was opportune for making the effort. He said this because there was a movement in the United States which had similar objects, namely the improvement of the conditions in the trade. In America the lubricating oil trade had drawn up a code of ethics for regulating the conduct of business among retailers.

An address on "Modern Developments in Connection with the Manufacture and Application of Lubricants" was given by Dr. A. E. Dunstan. In connection with standard tests of petroleum, the work of the Institution was, he said, most important. They started upon it five years ago, and it was well within the bounds of possibility that the final standard tests would be really international, and would hold sway wherever petroleum products were bought or sold. The report would, he believed, be the result of a collaborate effort between similar interests in America and themselves.

Professor Nash's Paper

An address on "The likelihood of oil being produced in this country by the carbonisation of coal" was to have been delivered by Professor A. W. Nash, professor in the Department of Oil Engineering and Refining, Birmingham University. In his unavoidable absence, Dr. A. R. Bowen, from the same department, gave the paper. He said before a consideration of the economics of the production of oil by the carbonisation of coal could be made there were two important factors that should be reviewed: (1) What was the present and immediate future of the relation of the world's supply of petroleum to the demand? and (2) how nearly did the tar oil products approach petroleum fractions in properties and behaviour? In the first case it had to be admitted there had been an over-production of petroleum, especially in the U.S.A., during recent years. It was impossible to say whether all the oilfields of the world were yet located, and, by the use of geophysical methods, it was quite probable that many new fields would be discovered. The present methods of production were better than the more wasteful methods of the past. Deep drilling also opened possibilities for increased petroleum supply.

The second factor was one of great interest to oil technologists. On resolution into its constituent fractions, high temperature tar gave a valuable aromatic motor spirit, phenolic middle oils, and anthracene-containing heavy oils. Low temperature tar similarly gave a non-aromatic spirit, which probably would have good anti-knock value from its olefine content; middle oils also containing phenols and nitrogenous bases, and heavier oils of little known nature as regards lubricating oil value. A lubricating oil from the low temperature carbonisation of a bastard cannel coal had been described, but cannel and brown coals gave oils more closely resembling shale oils than bituminous coal tars. A low temperature tar investigated in the Department of Oil Engineering and Refining of the University of Birmingham was found to have only half the durability of, and to produce forty times as much asphalt on oxidation as, a petroleum lubricating oil tested under similar conditions. The Bergius process, where the coal was carbonised under hydrogen pressures, yielded fractions more stable than those from low temperature tar. However, recent research showed that the lubricant fraction did not contain the same hydrocarbon constituents as petroleum oils, and the value of these had still to be shown. The economics of this process, which were bound up with problems of cheap hydrogen, might probably be simplified by dovetailing this process with others in the chemical industry. It was thus apparent that it was still early to speculate upon the future of oil production from coal, which was being investigated by many European countries, partly for political reasons. It was possible also that future research might show the production of more valuable higher fractions from low temperature tar.

A Chemical Trade Mark

"Hermoline" and "Germolene"

In the Manchester Chancery Court on Monday, Vice-Chancellor Courthope Wilson, K.C., had before him an action brought by the Veno Drug Co. (1925), Ltd., Trafford Park, Manchester, against Hermoline Products, Ltd., and Joseph Edward Burton, manufacturing chemist, 122, Carr Road, Nelson. They alleged that the word "Hermoline" was an infringement of their registered trade mark "Germolene," and asked for interlocutory injunctions pending the trial of the action restraining the defendants from using the word as part of their name, or to describe their products, and from doing anything to represent their products as being manufactured by the plaintiffs.

Mr. J. Bennett, instructed by Messrs. Vaudrey, Osborne, and Mellor, appeared for the plaintiffs; Mr. C. L. J. Holt, instructed by Messrs. Knowles and Foxcroft, represented the defendants.

Mr. Henry Gregory, the plaintiffs' managing director, stated in an affidavit that the trade mark "Germolene" was well known as describing the plaintiffs' goods. Recently they were informed by a chemist in Nelson that Hermoline Products, Ltd., were advertising largely in local newspapers, and there was much confusion with "Germolene," the poorer class of people believing the two things were the same.

Mr. Burton, in reply, said that in April, 1929, he took the business over from his father, who had traded in Nelson as a druggist for thirty years. During fifteen years the "Hermoline" ointment had been manufactured and sold. In pronunciation the word was quite distinct from "Germolene," the products were made up quite differently, and confusion between them was almost impossible.

The Vice-Chancellor said that when the action came to be tried the position might be different, but as the evidence now stood there was nothing to sustain an action for passing off. Nobody could be confused between the plaintiffs' products and those sold by the defendants when they were put side by side. On the issue as to the trade mark, "Hermoline" was not sufficiently near to be an imitation of the plaintiffs' "Germolene." Therefore he made no order on the motion except that the costs be costs in the action.

Lithopone Plant for Sydney

It is reported that the Electrolytic Zinc Co. of Australia, Hobart, Tasmania, has purchased property in Sydney upon which it intends to build a factory for the manufacture of lithopone. The factory site adjoins the plant of the British Australian Lead Manufacturers Pty. (Ltd.), who will act as distributors for the product. The present works of the Electrolytic Zinc Co. are in Tasmania and its main office in Melbourne. The authorised capital of the firm is stated to be £3,000,000, of which £2,600,000 has been issued in £1 shares. It is estimated that the capital required for extension of the company's activities to Sydney will amount to about £200,000. The paint and rubber industries in Australia have been active and the demand for lithopone has greatly increased. (U.S.A. Assistant Trade Commissioner, Lewis R. Miller, Sydney.)

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

(130). *Packing and Wrapping.*—A firm of casein manufacturers would like the names and addresses of firms who will pack and wrap their preparation into tins.

Appointments Vacant

Analytical and General Works Chemist.—Details on p. xx.

Senior Lecturer in Biochemistry in the University of Stellenbosch, South Africa.—The Registrar, Office of the University, Stellenbosch, South Africa. July 31.

From Week to Week

THE DANISH CHEMICAL SOCIETY this year celebrates the fiftieth year of its existence.

NEGOTIATIONS are said to be taking place with regard to the unissued portion (£3,000,000) of the bonds of the German Potash Syndicate.

THE ANNUAL OUTING given to the employees of Brunner Mond and Co. took place on Saturday at Blackpool. Special trains were run from Northwich, Hartford, Middlewich and Sandbach.

NITRAM, LTD., announce that from Saturday, June 22, their address will be Imperial Chemical House, Millbank, London, S.W.1. Telephone: Victoria 4444. Telegrams: Nitralam Parl. London.

THE NON-INFLAMMABLE FILM CO. announce that the board have co-opted Sir Ivor Phillips, Colonel Evatt, and Major Mein as additional directors, and Sir Ivor Phillips has been appointed chairman.

THE ENKA AND GLANZSTOFF companies have been amalgamated. The total output of the group will be 132,000 lb. of rayon daily. A representative of Courtaulds is to join the board. The name of the Enka company is to be changed to Algemeene Kunstzyde Unie.

A NEW SULPHURIC ACID FACTORY is to be erected in Poland by the Union Financière Belgo-Polonaise, and a commission is now in Poland examining the situation. A company affiliated to the Union Financière is to be formed, having a capital of six million zloty.

THE EXETER CITY COUNCIL recommends that, subject to the work being carried out to the satisfaction of the inspector, permission be granted to J. L. Thomas and Co., Ltd., tallow melters, soap and candle manufacturers, paint and oil merchants, to instal a solvent extraction plant of five tons capacity in one of the buildings at their Shilhay factory at Exeter.

THE BRITISH CYANIDES CO. announce that the new company which has been formed in conjunction with Dr. Lilienfeld to demonstrate the value of his patents for the treatment of cotton, has been registered in the name of The Cotton Treating Syndicate, with offices at 49, Wellington Street, Strand, London, W.C.2.

THE RIO TINTO CO., LTD., has offered its ordinary shareholders (in pursuance of resolutions passed at recent meetings increasing the company's capital), the option of purchasing 50,000 additional ordinary shares of £5 each at the price of £50 per share, in the proportion of one such share for every eight ordinary shares already held.

RECENT WILLS INCLUDE:—Mr. Frederick Richard Dixon-Nuttall, lately president of United Glass Bottle Manufacturers, Ltd. (net personalty £425,857), £532,309.—Mr. Rudolph Muspratt, son of Sir Max Muspratt (net personalty, £27,440), £30,002.—Mr. Harry Hill Gardam, of Harry H. Gardam and Co., Ltd. (net personalty £1,598), £4,169.—Mr. Richard White, Newcastle-on-Tyne, of White and Co., Ltd., chemical merchants, £1,373.

RESEARCH SCHOLARSHIPS IN TECHNOLOGY, each of a value not exceeding £100, will be awarded in July by the Manchester College of Technology. Applications must be made on or before July 6, on forms obtainable from the Registrar. As regards applied chemistry, research may be undertaken in general chemical technology; chemistry of textiles; dyestuffs; fuels; paper manufacture; metallurgy and assaying; chemical technology of brewing; and electrochemistry.

DUST EXPLOSIONS form the subject of a paper (Serial 2,927, April, 1929), just published by the U.S. Department of Commerce, Bureau of Mines, the authors of which are C. M. Bouton, C. H. Gilmour, and G. Phillips. The paper, which is entitled "A New Type of Laboratory Dust-Explosion Apparatus," presents a brief discussion of the difficulties encountered in fundamental work on dust explosions, a description of apparatus intended to overcome some of them, and an account of some results obtained.

THE NATIONAL DISTILLERS PRODUCTS CORPORATION of New York has contracted to sell to the United Molasses Co. its molasses business represented by stock ownership in the Old Time Molasses Co., a Cuban Corporation. United Molasses is also acquiring a 100 per cent. interest in the Solex Car Line Corporation, and one-half interest in the Eastern Alcohol Corporation, which owns and operates large industrial alcohol plants in Philadelphia. The other half-interest in the Eastern Alcohol Corporation is owned by E. I. du Pont de Nemours and Co.

THE GERMAN CHEMICAL SOCIETY held its annual meeting recently in Berlin. The president, Professor H. Wieland, of Munich, said that the number of members was 5,265, and that for the financial year 1928 a deficit had, by the assistance of the industry, been avoided. The centenary of the *Chemische Zentrallblatt* was to be celebrated on November 11. Professor Wieland remains president until May 31, 1930; the vice-presidents are Professors H. Freundlich, C. Neuberg, A. Windaus, and P. Walden; the secretaries, H. Leuchs and F. Mylius; the treasurer, A. von Weinberg; and the librarian, A. Rosenheim.

PROFESSOR P. WALDEN, of Rostock, has received the Leblanc medal of the Société Chimique de France.

THE PRODUCTION OF METHYL ALCOHOL in the United States in April amounted to 732,000 gallons, as compared with 714,000 in the previous month.

THE FRENCH KUHLMANN CONCERN earned a net profit of 39·41 million francs in 1928, as compared with 34·01 million in 1927. The dividend is 40 per cent., as last year.

THE IMPORTS OF VANILLIN into the United States in 1928 were 15,332 lbs., or four times the amount imported in 1927. The 1926 imports amounted to 221 lbs. More than half the 1928 imports came from Germany.

MR. A. A. DRUMMOND, M.Sc., A.I.C., has been appointed editor of the *Journal of the Oil and Colour Chemists' Association*. Communications should be addressed to him at "Glenmore," The Greenway, Gerrards Cross, Bucks.

THE HOFFMANN–LA ROCHE A.-G., of Basle, Switzerland, has founded a subsidiary company in Berlin, with a capital of 500,000 Reichsmarks. The company will manufacture and market chemical and pharmaceutical products. A further subsidiary is also being founded in Prague.

THE BOROUGH COUNCILS of Chelsea and Kensington have expressed their willingness to take joint action with the Westminster City Council to safeguard public health and property from the nuisance likely to be caused by sulphur fumes emitted by the proposed Battersea power station.

THE BRITISH PHARMACEUTICAL CONFERENCE will be held in Dublin from Monday, June 24, to Thursday, June 27, under the chairmanship of Mr. R. R. Bennett, B.Sc., F.I.C., of British Drug Houses, Ltd., whose address will deal with "The Changing Foundations of Materia Medica."

THE EXPLOSION AND FIRE which occurred at a Cleveland (U.S.) hospital recently, resulting in more than 120 deaths, were investigated by the Chemical Warfare Service Department of the United States Army. The Department reports that the deaths were caused by carbon monoxide and oxides of nitrogen, given off by burning X-ray films.

A UNIVERSAL indicator which gives the colours of the spectrum from orange-red to reddish-violet at p_H 3–11·5 has been described in the *Pharm. Weekblad* (1928, volume 65, pp. 1246–1249). The composition is as follows: Methyl orange 0.1g., methyl red 0.04g., bromthymol blue 0.4g., phenolphthalein 0.5g., naphtholphthalein 0.32g., cresolphthalein 1.6g., made up with ether to 100 c.c.

THE DIRECTORS of the Yorkshire Artificial Silk Co. announce that owing to the failure of certain underwriters of the company's shares to meet their obligations, to the pressure of creditors, and to the inability of the company to raise the requisite working capital to carry on its business, they have been obliged in the interests of the creditors and shareholders to present a petition for the winding-up of the company.

Obituary

C. CRINON, founder of the *Annales de Chimie Analytique*, recently, aged 90.

GIUSEPPE PLANCHER, professor of chemistry at Bologna, on April 27, aged 58.

JAMES W. FULLER, since 1910 president of the Fuller Lehigh Co., recently, in San Francisco, of sleepy sickness.

PROFESSOR CHARLES LEON FRANCOIS MOUREU, of the College de France. An obituary notice appears on page 586.

MR. HENRY FRANKLAND, at Whitby, aged 69, who was for many years associated in business with the late Dr. J. E. Stead, the well-known Middlesbrough metallurgist.

MR. C. F. BRUSH, at Cleveland, Ohio, aged 70. He was the inventor of the electric arc lamp and numerous other important electrical devices, but began his career as a chemist.

MR. JOHN BAIRSTOW, of Chester, formerly secretary to Joseph Turner & Co., chemical manufacturers, Green's Ferry, Flintshire, and managing director of the Midland Tar Distillers, Ltd., of Birmingham, since the former firm's amalgamation with them.

PROFESSOR RICHARD WOLFFENSTEIN, of the Technical High School at Berlin-Charlottenburg, on June 5, aged 64. He carried out investigations on alkaloids, hydrogen peroxide, carbonates and percarbonates, persulphates, the nitration of organic substances, and other subjects.

MR. WILLIAM LONGTON HICKS, representative of the Cunard Line in Berlin, and formerly lecturer in chemistry at Liverpool University. Mr. Hicks served as an expert on anti-gas service in the war, and in 1918 was assistant to the head of the British Mission in Russia, and was imprisoned for six weeks.

MR. JOHN CALDER HEBDEN, of Brooklyn, U.S.A., widely known as a chemical engineer and co-inventor of the Franklin dye process. Mr. Hebden was vice-president and general manager of the Dyeing Process Corporation of Providence and vice-president of the Hebden Sugar Process Corporation. He was a member of numerous chemical societies.

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ANALYSIS.—Test for vitamin A in margarine, butter, and other fatty foods. A. Andersen and E. Nightingale. *J.S.C.I.*, June 14, pp. 139–140 T.

COAL HYDROGENATION.—The action of hydrogen on coal. J. I. Graham and D. G. Skinner. *J.S.C.I.*, June 14, pp. 129–136T.

INTENSIVE DRYING.—The dehydration of benzene. J. J. Manley. *Nature*. June 15, p. 907.

The intensive drying of liquids. S. Lenher. *Nature*. June 15, pp. 907–908.

RUBBER.—Studies in the oxidation of rubber mixings. W. C. Davey. *Institution Rubber Industry Transactions*, April pp. 493–498.

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Chemical reactions in rubber compounds. I. Reactions between pine tar and litharge. W. H. Reece. *Institution Rubber Industry Transactions*, April, pp. 526–532.

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United States

AMMONIA.—The synthesis of ammonia in the glow discharge. A. K. Brewer and J. W. Westhaver. *J. Phys. Chem.*, June, pp. 882–895.

ANALYSIS.—Notes on some tests for acetone and acetaldehyde. H. Leffmann. *Amer. Journ. Pharmacy*, May, pp. 337–340.

Determination of unsaponifiable matter in fish oils. W. H. Dickhart. *Amer. Journ. Pharmacy*, May, pp. 372–373.

A gravimetric and colorimetric method for the direct determination of sodium. E. R. Caley with C. W. Foulk. *J. Amer. Chem. Soc.*, June, pp. 1664–1674. The method depends on the precipitation of magnesium sodium uranyl acetate.

APPARATUS.—A simple centrifugal filtration device for purification of small amounts of material by recrystallisation. E. L. Skau. *J. Phys. Chem.*, June, pp. 951–954.

An all-glass circulating pump for gases. R. Livingston. *J. Phys. Chem.*, June, p. 954.

CHEMICAL ENGINEERING.—The condensation of steam. D. F. Mothmer. *Ind. Eng. Chem.*, June 1, pp. 576–583. An apparatus has been built for studying the effect of temperature, concentration of small amounts of air, and temperature drop on the rate of condensation of steam on an isothermal condensing surface. The results are expressed in the form of an empirical equation.

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Effect of cathode rays on hydrocarbon oils and on paper. C. S. Schoeffle and L. H. Connell. *Ind. Eng. Chem.*, June 1, pp. 529–537.

Sulphonated oxidation products of petroleum as insecticide activators. M. T. Inman, Jnr. *Ind. Eng. Chem.*, June 1, pp. 542–543.

The spontaneous decomposition of sugar-cane molasses. C. A. Browne. *Ind. Eng. Chem.*, June 1, pp. 600–606. An investigation of two samples of sugar-cane molasses which had been undergoing spontaneous decomposition for 14 years showed that the decomposition was mainly due to the formation of unstable compounds (glucic acid) by the action of the lime used in clarification on the reducing sugars of the cane juice.

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Some observations upon wetting power. E. L. Green. *J. Phys. Chem.*, June, pp. 921–935.

The decomposition of mercurous chloride in concentrated solutions of other chlorides. T. W. Richards and M. Françon. *J. Phys. Chem.*, June, pp. 936–950.

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SOLVENTS.—Place of synthetic amyl products among lacquer solvents. M. M. Wilson and F. J. Worster. *Ind. Eng. Chem.*, June 1, pp. 592–594. Data on the use of amyl alcohol (from pentane) and amyl acetate.

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German

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A new electrically-heated drying apparatus. *Chemiker-Zeitung*, June 15, p. 470.

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Monobromoamine. W. Moldenhauer with M. Burger. *Berichte*, June 5, pp. 1615–1618.

The singular course of the solubility of calcium hydroxide in cane sugar solutions of low concentration. P. Fuchs. *Berichte*, June 5, pp. 1535–1538.

ORGANIC.—The synthesis of cane sugar. A. Pictet and H. Vogel. *Berichte*, June 5, pp. 1418–1422.

The catalytic reduction of nitro-compounds. M. Busch and K. Schulz. *Berichte*, June 5, pp. 1458–1466.

Polynuclear aromatic hydrocarbons and their derivatives. IV. Naphthophenanthrenes and their quinones. E. Clar. *Berichte*, June 5, pp. 1574-1582.

Potato starch. K. Hess and F. A. Smith. *Berichte*, June 5, pp. 1619–1626.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

311,251. LIQUID HYDROCARBONS, MANUFACTURE OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, December 5, 1927.

In the destructive hydrogenation of coal, tars, or mineral oils in presence of catalysts to produce valuable liquid hydrocarbons, the catalysts used, comprising metals and/or their compounds, deposited, if desired, on suitable carriers, are found to be more effective if they have been subjected to a preliminary treatment at an elevated temperature with gases which have no reducing action upon them. According to the examples, suitable catalysts are obtained by (1) treating molybdic acid with carbon dioxide at 400° C., (2) treating tungstic acid with nitric oxide at 350° C., (3) treating a mixture of molybdic acid and chromium oxide with sulphur dioxide at 420° C., (4) treating a mixture of molybdic acid and silver oxide with nitrogen at 400° C., (5) treating cobalt oxide with carbon dioxide at 350° C., (6) treating a mixture of molybdic acid and chromic acid with carbon dioxide at 400° C., and (7) heating molybdenum wire wool with oxides of nitrogen.

311,299. HYDROGEN, PRODUCTION OF. K. Gordon, Norton Hall, The Green, Norton-on-Tees, Durham, and Imperial Chemical Industries, Ltd., Millbank, London, S.W.1. Application date, January 31, 1928.

To remove carbon dioxide from hydrogen and gases containing it, it is customary to scrub the gas with water or an aqueous solution under pressure, and the use of a necessarily large quantity of washing water involves serious losses of hydrogen by absorption. It is now found that the absorbed hydrogen may be recovered if the pressure on the solution is released not all at once but in stages. Gaseous mixtures of different compositions are thus recovered in the several stages, and the gas relatively rich in hydrogen first evolved is preferably recompressed and returned to the washing process.

311,349. ARYL-AZO-DIAMINOPYRIDINES. A. K. Croad, London. From the Pyridium Corporation, New York, U.S.A. Application date, November 10, 1927.

The production of phenyl-azo-α : α-diamino-pyridine monohydrochloride (called pyridium) is effected by allowing the combination of the diazotized aniline with the α : α-diaminopyridine to take place in presence of a relatively small quantity of mineral acid or in presence of organic acids, and treating the resulting phenyldiazoamino-(α) : α-monoaminopyridine hydrochloride with boiling water or with an aromatic amine. Alternatively, by using sufficiently concentrated solutions containing not less than 6 per cent. of hydrochloric acid at a temperature above 12° C., the pure crystalline dihydrochloride may be separated and decomposed by means of boiling water into pyridium and hydrochloric acid. Similar products showing a higher toxicity but a weaker bactericidal action are obtained when the aniline is replaced by its homologues or alkoxy derivatives.

311,465. BENZOIC ACID DERIVATIVES, PRODUCTION OF. H. W. Hereward, L. J. Hooley, J. Thomas, and Scottish Dyes, Ltd., Earl's Road, Grangemouth, Stirling. Application date, February 16, 1928.

Halogenated amino-benzoyl-benzoic acids, such as the 4¹-chlor-3¹-amino-2-benzoyl-benzoic acid, are obtained by subjecting the corresponding halogen-nitro-benzoyl-benzoic acids to the action of iron in presence of water, preferably with the addition of a small quantity of an inorganic salt such as sodium chloride. In examples, aqueous suspensions of the nitro compounds are treated with iron filings or iron dust and salt at 75° C.

311,468. PURIFICATION OF ALCOHOLS. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 16, 1928.

Impurities are removed from alcohols, such as methanol, isobutyl alcohol, etc., obtained by the catalysed interaction of hydrogen with oxides of carbon, by treating the synthesised product or a distillation fraction thereof with oxidising agents such as potassium permanganate, hydrogen peroxide, persulphates, perborates, percarbonates, or hypohalites. The addition of a relatively non-volatile alkali or organic base and/or metallic halides, other than alkali halides (to remove ammonia or relatively volatile organic bases) is advantageous in some cases. The products to be purified may be diluted with water before or during distillation, and an additional purifying substance acting by adsorption, such as fuller's earth, decolorising carbon, active carbon, or silica gel, may be employed.

311,553. NITRIC ACID, PRODUCTION OF. C. C. Smith, Norton Hall, The Green, Norton-on-Tees, Durham, and Imperial Chemical Industries, Ltd., Millbank, London, S.W.1. Application date, May 10, 1928.

Nitrogen oxides obtained by the oxidation of ammonia are absorbed, preferably under pressure, in dilute nitric acid, the solution so obtained is concentrated by evaporation, and the condensate from the evaporation constitutes the dilute acid for absorbing further quantities of the oxides. The nitric acid is thus produced without addition of water other than that resulting from the reaction itself. The concentration may be effected by heat exchange with the hot gases from the ammonia oxidation burners, the water removed being continuously returned to the absorbers.

311,671. 1 : 3-BUTYLENEGLYCOL, MANUFACTURE OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February, 9, 1928.

Aldol is passed in the liquid state or in solution, together with hydrogen or gases containing it, over a hydrogenating catalyst at a temperature above 50° C. and at a pressure above the atmospheric.

311,788. MONO-OR POLY-HYDRIC ALCOHOLS, PRODUCTION OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, December 2, 1927. Addition to 309,200. (See THE CHEMICAL AGE, Vol. XX, p. 453.)

The parent specification describes the production of mono- and poly-hydric alcohols in which reaction mixtures obtained by the condensation of aldehydes and/or ketones are subjected to catalytic hydrogenation with or without a preliminary treatment to remove unaltered aldehydes or ketones. It is now found to be advantageous in some cases to separate the condensing agents from the condensation product prior to the hydrogenation. For this purpose it is preferred to employ condensing agents which are practically insoluble in the reaction mixture, or become so after condensation has taken place, or can readily be rendered insoluble. Suitable condensing agents are oxides, hydroxides, basic salts, carbonates, or formates of magnesium, barium, calcium, strontium, lead, and lithium. In examples solutions of formaldehyde are heated under pressure with (1) lead hydroxide, (2) magnesia. In (1) any lead remaining in solution is precipitated as sulphate and removed prior to the hydrogenation. In (2) the reaction mixture is concentrated *in vacuo* and the condensation product is separated from the magnesia by extraction with alcohol prior to the hydrogenation. In each case the final product is a mixture of higher polyhydric alcohols containing some glycc- and glycerol.

311,789. HYDROCARBONS OF HIGH BOILING POINT INTO THOSE OF LOW BOILING POINT, CONVERSION OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, December 14, 1927.

The high boiling point materials, such as mineral oils, tars, products of the destructive hydrogenation of coal, oils or tars, or distillation and conversion products therefrom, are heated at 350-600° C. in presence of catalysts of the type of the complex "ansolvo" acids or of components producing such acids, i.e., compounds or mixtures of organic acids with inorganic salts, which increase the power of the acids to split off hydrogen ions. Specified catalysts are mixtures or double

compounds of (1) α-naphthoic acid and tin tetrachloride, (2) 1-naphtholcarboxylic acid and aluminium chloride, (3) oleic acid and zinc chloride, (4) formic acid and aluminium chloride, (5) α-naphthoic acid and antimony pentachloride. The operation may be effected in presence of hydrogen or gases containing or supplying it, or of inert gases such as nitrogen.

311,899. Liquid Hydrocarbons, Manufacture of. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 10, 1928. Addition to 258,608. (See The Chemical Age, Vol. XV, p. 502.)

The starting material is a gaseous mixture composed of methane or ethane or mixtures of both together with substantial amounts of unsaturated hydrocarbons, especially olefines, or of the higher homologues of the paraffin series, if desired, together with hydrogen, the composition of the mixture being essentially such that the ratio of the carbon combined with hydrogen to the free and combined hydrogen is higher than the ratio in methane. Mixtures rich in olefines, resulting from the distillation or decomposition of coal, tars, or mineral oils, are advantageously employed. Such mixtures are passed, at elevated temperatures, preferably 500-900° C., and at atmospheric pressure, over one or more of the following catalytic agents: an alkaline earth carbonate, a carbonate or salt of magnesium or glucinum alone or in admixture or mixed with compounds of other metals, particularly salts of alkaline earth metals, oxides or hydroxides of magnesium or glucinum, compounds of selenium, tellurium, or thallium, active charcoal, active silica, pumice stone, lustrous carbon, aluminium, sodium borate, aluminium borate, barium carbonate precipitated on diatomaceous earth, porous carbon, or barium oxide.

311,934. Nitric Acid, Production of. A. E. Mitchell and C. C. Smith, Norton Hall, The Green, Norton-on-Tees, Durham, and Imperial Chemical Industries, Ltd., Millbank, London, S.W.1. Application date, May 10, 1928.

In the production of nitric acid by the absorption of gases containing nitrogen oxides and oxygen in water or dilute nitric acid, according to the reactions

$$N_2O_4 + H_2O \longrightarrow HNO_3 + HNO_2,$$
$$3HNO_2 \longrightarrow HNO_3 + 2NO + H_2O,$$
and $$2NO + O_2 \longrightarrow N_2O_4$$

the main difficulty is to secure a sufficiently rapid rate of absorption, the limiting factor being the rate of reoxidation of the nitric oxide. It is now found that a sufficiently rapid absorption is effected by exposing the gases under pressure (5-10 atmospheres) to moving continuous films, preferably turbulent, of water or dilute nitric acid. In the preferred arrangement the gases are circulated around a nest of tubes cooled internally by water and supplied externally with moving films of the absorption liquid.

311,977. 1-Aminoanthraquinone-2-Sulphonic Acid, Manufacture of. Imperial Chemical Industries, Ltd., Millbank, London, S.W.1, A. Davidson, W. W. Tatum, and G. E. Watts, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, July 2, 1928.

According to Specification 299,279 (see The Chemical Age, Vol. XIX, p. 517), 1-aminoanthraquinone-2-sulphonic acid was obtained by heating a sulphate of 1-aminoanthraquinone at 210-245° C. It is now found that a higher yield is obtained when oxalic acid is added to the material to be heated. This applies even when the impure commercial 1-aminoanthraquinone is used, and the process has the further advantage that a porous mass which crumbles readily is obtained instead of a hard cake.

311,986. White Lead, Process for the Production of. Metallbank und Metallurgische Ges. Akt.-Ges., 45, Bockenheimer-Anlage, Frankfort-on-Main, Germany, and G. Sitz, 6, Alsterufer, Hamburg, Germany. Application date, July 17, 1928.

Relates to the production of white lead free from chlorine from lead chloride-containing mixtures such as are obtained from plumbiferous flue dust and like materials, having a certain chloride content, by leaching or digesting such materials with hot concentrated alkali chloride solution, separating the liquor, and precipitating the lead chloride-containing mixture from it by cooling and/or dilution. The lead chloride is converted into basic lead carbonate by gradually adding to an aqueous suspension of such a mixture a sodium carbonate solution, which may also contain caustic soda, while continually intimately mixing the suspension with the solution and regulating the addition of the solution in accordance with the progress of the transformation in such a manner that the solution does not show an alkaline reaction until all the lead chloride has been converted into the basic carbonate. The basicity of the product is regulatated by adjusting the temperature and/or concentration of the sodium carbonate solution.

Note.—Abstracts of the following specifications, which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention:—285,488 (I.G. Farbenindustrie Akt.-Ges.) relating to manufacture of aniline-2; 5-disulphonic acid, see Vol. XVIII, p. 369; 285,812 (I.G. Farbenindustrie Akt.-Ges.) relating to manufacture of azo dyes, see Vol. XVIII, p. 397; 286,688 (Schering-Kahlbaum Akt.-Ges.) relating to manufacture of dihalogen-acylated diphenylethers and highly active therapeutic substances therefrom, see Vol. XVIII, p. 463; 287,064 (W. J. Hale and W. S. Haldeman) relating to a method of producing organic acids, see Vol. XVIII, p. 463; 290,568 (Vereinigte Stahlwerke Akt.-Ges.) relating to production of dry ferric chloride, manganic chloride, or like metallic chlorides, see Vol. XIX, p. 57; 290,602 (British Thomson-Houston Co., Ltd.), relating to vulcanization of rubber, see Vol. XIX, p. 57; 295,289 (I.G. Farbenindustrie Akt.-Ges.) relating to manufacture of azo dyestuffs, see Vol. XIX, p. 369; 295,943 (I.G. Farbenindustrie Akt.-Ges.) relating to manufacture of compounds of the anthracene series, see Vol. XIX, p. 399; 303,068 (I.G. Farbenindustrie Akt.-Ges.) relating to a process for extracting acetylene from gases, see Vol. XX, p. 214; 304,179 (Selden Co.) relating to purification of crude anthracene, see Vol. XX, p. 283; 304,613 (L. Cassella and Co., Ges.) relating to manufacture of dyestuffs of the anthanthrone series, see Vol. XX, p. 320.

International Specifications Not Yet Accepted

309,498. Oxidising Organic Compounds. D. Futacchi, 159, Rue de la Convention, Paris. International Convention date, April 11, 1928.

Oxidation of organic substances is effected by the action of air or oxygen under pressure on the heated substances. Substances which are not liquid are dissolved in a liquid not readily oxidised under the conditions used. Oxidations are described of methyl alcohol (to ethylene glycol containing some glycerol, poly-alcohols, and sugars), of petroleum (to alcohols, aldehydes, and ketones), of paraffins (to fatty acids), and of paraffins in the presence of ammonia to amino-acids.

309,552. Dyes. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 12, 1928. Addition to 299,721 (see The Chemical Age, Vol. XX, p. 13).

Acid wool dyes such as are described in the parent specification are obtained by the action of reducing agents in aqueous solution on nitronaphthalimides or N-alkyl, N-aralkyl, or N-aryl derivatives thereof. By the use of reducing agents such as hydrosulphite or bisulphite simultaneous reduction and sulphonation may be effected. The nitronaphthalimides may be obtained by oxidation of nitroacenaphthenes or by direct nitration of naphthalic anhydride and condensation of the product with ammonia or an aliphatic or aromatic amine.

309,565. Ammonium Sulphate. C. J. Hansen, 33, Trappenbergstrasse, Essen, Germany (Assignee of Koppers Akt.-Ges., Postfach 948, Essen, Germany.) International Convention date, April 14, 1928.

Ammonium sulphate and sulphur are produced from ammonium thiocyanate (obtained, for example, in scrubbing coal distillation gases) by heating the thiocyanate in presence of a solution containing a polythionate, a thiosulphate, free sulphurous acid, or ammonium sulphate or bisulphate.

309,577. Ketene. Kodak, Ltd., Kingsway, London (Assignees of H. T. Clarke and C. E. Waring, Kodak Park, Rochester, New York, U.S.A.). International Convention date, April 13, 1928.

Ketene is obtained by passing the vapour of acetone or a like suitable compound through a chamber containing a metallic network or sponge-like structure of high heat conductivity and free from iron and nickel. Silver, copper, and copper alloys such as brass or bronze are suitable. In an example, acetone is passed through a copper tube containing copper turnings heated to 650-670° C.

309,582–3. Catalytic Oxidation of Ammonia. Selden Co., McCartney Street, Pittsburg, U.S.A. (Assignees of A. O. Jaeger, 9, North Grandview Avenue, Crafton, Pennsylvania, U.S.A.). International Convention date, April 14, 1928.

In each case the catalyst used comprises a diluted or undiluted base-exchange body in which the catalytically-active components may be in chemical combination in exchangeable or non-exchangeable form, or may be present as diluents. According to Specification 309,582, the base-exchange body is of the non-siliceous type prepared, for example, as described in Specification 286,212 (see The Chemical Age, Vol. XVIII, p. 417). According to Specification 309,583, the base-exchange body is a multi-component zeolite prepared, for example, as described in Specification 279,466 (see The Chemical Age, Vol. XVII, p. 622).

309,585. Gas Purifying Compositions. Compagnie Internationale pour la Fabrication des Essences et Petroles, 1, Avenue de Villars, Paris. International Convention date, April 13, 1928.

A composition for removing sulphur from fuel gases comprises a metal such as nickel, cobalt, or copper, or its oxide on an inert carrier such as clay, pumice, or kieselguhr, the proportion of metal or oxide to carrier being such that the composition cannot retain more than 10 per cent. by weight of sulphur. It is found that when such a composition is regenerated by air or oxygen the heat liberated does not damage the activity of the metal or oxide.

309,598. Titanium Dioxide. Deutsche Gasgluhlicht-Auer-Ges., 16, Rotherstrasse, Berlin. International Convention date, April 14, 1928.

To remove chromium from titanium dioxide the material is mixed with a small excess of alkali, dried, roasted, and leached to wash out the chromate.

309,602. Hydrogen Peroxide. Soc. l'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédées G. Claude, 48, Rue St. Lazare, Paris. International Convention date, April 14, 1928.

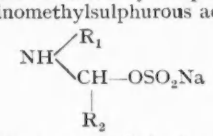
Hydrogen peroxide is prepared from hydrogen and oxygen by the combustion of a jet of either gas in an atmosphere of the other, or by passing a mixture of the gases over platinised asbestos or other suitable catalyst, the reactions being carried out at pressures of 25 to 1,000 atmospheres or more. The gases may be preheated, and diluted with inert gases to avoid explosions.

309,604. Phosphoric Acid. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 13, 1928.

Calcium phosphate is treated with sulphuric acid to obtain phosphoric acid and gypsum. The latter is worked up in known manner with materials containing carbon and alumina to yield cement and sulphuric acid, and this sulphuric acid is used for the treatment of a further quantity of phosphate.

309,610. Diazoamino Compounds. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 14, 1928.

Diazoamino compounds applicable as dyestuff intermediates and as insecticides are obtained by coupling aromatic diazo compounds with aminomethylsulphurous acids of the formula



in which R_1 is hydrogen, an aliphatic or hydro aromatic radicle, or the residue of an alkylsulphurous acid, and R_2 is alkyl, aryl, or aralkyl.

309,834. Titanium Sulphates. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 13, 1928.

Sulphuric acid solutions of titanium sulphate are filtered through a cloth of nitrated cellulose for the removal of particles of unchanged ore, carbon, or gangue. Compounds of trivalent titanium, which attack the filter cloth, must not be present, but ferric salts may first be reduced, *e.g.*, by means of iron. A trivalent titanium compound may be added to the filtrate or be produced therein by electrolytic or other reduction.

309,855. Carbon. Naamlooze Venootschap Norit-Vereeniging Verkoop Centrale, 2, Den Texstraat, Amsterdam. International Convention date, April 16, 1928.

Carbon of a predetermined activity or decolorising power is obtained by impregnating granular or fragmentary charcoal, brown coal, or anthracite with activating, oxidizing, purifying, extracting, etc., chemicals, and subjecting it to a burning operation. Among the chemicals which are suitable are phosphoric, nitric, sulphuric and hydrochloric acids and their salts, carbonates, hydroxides, sulphides, salts of alkali or alkaline earth metals or of ammonium, iron, zinc, or aluminium. Non-volatile chemicals may be removed, after the burning, by extraction and washing.

309,865. Alkylphenols. Schering-Kahlbaum Akt.-Ges., 170, Müllerstrasse, Berlin. International Convention date, April 16, 1928. Addition to 254,753. (See The Chemical Age, Vol. XV, p. 279) and 274,439. (See The Chemical Age, Vol. XVII, p. 291.

Dioxydiphenylmethane and its derivatives are treated in presence of a hydrogenation catalyst with hydrogen diluted with an inert gas or vapour, *e.g.*, nitrogen or steam. Higher temperatures may be employed than in the process of the parent specifications, and the reaction velocity is thus increased without any occurrence of nuclear hydrogenation. The examples describe the production of *p*-isopropylphenol and phenol from di-(4-oxyphenyl) dimethylmethane, and of thymol and *m*-cresol from di-(4-methyl-6-oxyphenyl) dimethylmethane, using diluted hydrogen under pressure at about 200° C.

309,911. Synthetic Perfumes. Soc. Anon. M. Naef et Cie, 1, Chemin des Melezes, Geneva, Switzerland. International Convention date, April 17, 1928.

Products having value as perfumes or in the manufacture of perfumes are (1) cyclohexene aldehyde or its homologues, obtained by heating butadiene or its homologues under pressure at about 150–200° C. with acrolein or its homologues; (2) cyclohexene carboxylic acids or their esters, obtained by heating similarly butadiene or its homologues with acrylic acid or esters or homologues thereof; (3) cyclohexadiene aldehydes, carboxylic acids, and esters, obtained by heating similarly butadiene or its homologues with the acetylenic aldehydes corresponding to the above olefinic aldehydes.

309,949. Synthetic Drugs. A. Boehringer, 75, Bingerstrasse, Nieder-Ingelheim-on-Rhine, Germany. International Convention date, April 18, 1928.

1 : 5-disubstituted tetrazoles are prepared by converting esters of the enolic form of monosubstituted acid amides into hydrazidines by means of hydrazine and its salts, and treating the hydrazidines in known manner with nitrous acid or a like agent capable of introducing the nitroso group.

309,957. Decomposing Leucite. F. Jourdan, 2, Via Pisanella, Rome. International Convention date, April 18, 1928.

Leucite is converted by treatment with excess of gaseous nitric acid, with or without nitrogen oxides, in presence of water vapour into a mixture of nitrates of potassium, aluminium, and iron with silica. This mixture is dried and heated to decompose the aluminium and iron nitrates, whereupon the potassium nitrate may be recovered by leaching, or the mixture may be used as a manure.

Latest Notifications.

313,153. Catalytic oxidation of ammonia. Selden Co. June 9, 1928.

313,123. Manufacture and production of valuable hydrocarbons. I.G. Farbenindustrie Akt.-Ges. June 7, 1928.

313,124. Manufacture of compounds containing active oxygen. I.G. Farbenindustrie Akt.-Ges. June 7, 1928.

312,998. Process for the manufacture of vulcanised fibres and the like. I.G. Farbenindustrie Akt.-Ges. June 4, 1928.

313,091. Process for reducing the viscosity of cellulose derivatives. Imperial Chemical Industries, Ltd. June 6, 1928.

313,093. Catalytic processes particularly for the hydrogenation and dehydrogenation of organic compounds. Du Pont De Nemours and Co., E.I. June 6, 1928.

313,094. Manufacture of dyestuffs. I.G. Farbenindustrie Akt.-Ges. June 6, 1928.

313,095. Manufacture of azo-dyestuffs and the application thereof. Soc. of Chemical Industry in Basle. July 26, 1927.

313,135. Treatment of metals with acid liquids. Soc. of Chemical Industry in Basle. June 7, 1928.

Specifications Accepted with Date of Application

281,307. Catalytic oxidation of organic compounds. Selden Co. November 24, 1926.

284,245. Adsorbing agents, Manufacture of. A Rosenheim. January 25, 1928. Addition to 275,203.

285,404. Dihydromorphine, Process for the manufacture of. A. Boehringer. February 15, 1927.

286,252. Water soluble or emulsifiable products from wool fat Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 1. 1927.

287,095. Condensation products from urea, thiourea, or their derivatives, and an alcohol or ketone, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 14, 1928. Addition to 278,390.

290,230. Yellow monoazo dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. May 10, 1927.

290,649. Aromatic aldehydes, Process for the production of. J. D. Riedel Akt.-Ges. May 20, 1927. Addition to 285,451.

294,248. Solid stable diazo compounds, Manufacture of. Kalle und Co. Akt.-Ges. July 21, 1927.

298,981. 2 : 4 : 6-Trinitro-1 : 3 : 5-triazidobenzene, Method of producing. O. Turck. October 18, 1927.

306,884. Catalytically removing hydrogen—or oxygen—containing groups from organic compounds, Method of. Selden Co. February 27. 1928.

312,585-6. Aliphatic acid anhydrides, Manufacture of. H. Dreyfus, January 28, 1928.

312,587. Aliphatic acid anhydrides, Manufacture of. British Celanese, Ltd., and S. J. Green. January 28, 1928.

312,598-599-600. Electrodeposition of metals. Electro Bleach and By-Products, Ltd., J. Hollins, and D. Jepson. February 25, 1928.

312,678. Ortho-ortho^1-dicarboxyldiphenyldiamino-anthraquinones. W. L. Rintelman and R. J. Goodrich. January 31, 1928.

312,716. Acetaldehyde from acetylene or gaseous mixtures containing the same, Manufacture and production of. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). March 10, 1928.

312,717. Hydrocarbons, Manufacture and production of. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). March 10, 1928.

312,726. Aluminium sulphate, Production of. G. F. Horsley and Imperial Chemical Industries, Ltd. March 19, 1928.

312,732. Alkali hydroxides, Process of making. L. P. Curtin. March 20, 1928.

312,733. Aliphatic anhydrides. Manufacture of. H. Dreyfus. March 21, 1928. Addition to 280,972.

312,741. Synthetic rubber, Process for the production of. E. Kleiber and P. Gilardi. March 26, 1928.

312,746. Generating gaseous oxides of sulphur, Method of and means for. Clayton Installations, Ltd., and W. A. Muirhead. March 30, 1928.

312,769. Desulphurization of gases. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). April 26, 1928.

312,837. Anthraquinone, Recovery and purification of. Imperial Chemical Industries, Ltd., A. Davidson, A. Shepherdson, and J. Thomas. June 28, 1928.

312,845. Metallic alloy. C. A. Boulton. July 11, 1928.

Applications for Patents

American Potash and Chemical Corporation. Calcined borax, and production of same. 18,428. June 14. (United States, March 11.)

Anderson, I. B., Scottish Dyes, Ltd., Thomas, J., and Thomson, R. F. Production, etc., of benzanthrone derivatives, etc. 18,404. June 14.

Anglo-Chilean Consolidated Nitrate Corporation. Manufacture of sodium nitrate. 18,434. June 14. (United States, July 10, 1928.)

Boehringer, A., and Boehringer Sohn, C. H. Preparing pyridine, etc., alkines. 17,977. June 11. (Germany, June 21, 1928.)

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of anhydrous sodium sulphide. 17,753. June 10.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Rendering animal-fibre materials immune from moth, etc. 17,754. June 10.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of 2 : 4-di-(nitrophenyl)-6-halogen 1 : 3 : 5-triazines. 17,755. June 10.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of esters of polysaccharide ethers, etc. 17,908. June 11.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of products from cellulose esters, etc. 18,079. June 12.

Carpmael, A., and I.G. Farbenindustrie Akt.Ges. Manufacture of mono- and dimethylol-para-halogen-hydroxyaryl compounds. 18,080. June 12.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of patent leather. 18,401. June 14.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of azo dyestuffs. 18,402. June 14.

Chemical Engineering and Wilton's Patent Furnace Co., Ltd. Distillation of oil or tar. 18,231. June 13.

Chemieverfahren Ges. Production of alkali sulphates. 18,511. June 15. (Germany, July 30, 1928.)

Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Preparing cardiac substances. 17,776. June 10.

Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Extracting active substances from posterior lobe of hypophysis. 17,926. June 11.

Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Manufacture of azo dyestuffs. 18,083. June 12.

Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Manufacture of coloured varnish coatings on glass articles. 18,376. June 14.

Guillissen, J., and Union Chemique Belge Soc. Anon. Manufacture of fluosilicate of sodium. 17,773. June 10.

Höfer, P., and Kali-Forschungs-Anstalt. Ges. Production of potassium nitrate. 18,217. June 13.

I.G. Farbenindustrie Akt.-Ges., and Imray, O. Y. Manufacture of compounds having an affinity for cotton. 17,925. June 11. (January 4.)

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of acetaldehyde. 18,050. June 12.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of vat dyestuffs. 18,051. June 12.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of sulphuric acid and nitric acid. 18,203. June 13.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Purification of highly-concentrated nitric acid. 18,346. June 14.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of electrodes for accumulators. 18,347. June 14.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of fertilising salts. 18,492. June 15.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of aqueous coating-compositions. 18,493. June 15.

I.G. Farbenindustrie Akt.-Ges. Production of viscous oils, etc. 17,868. June 11. (Germany, June 18, 1928.)

I.G. Farbenindustrie Akt.-Ges. Feed apparatus for machines for de-pulping fibre-containing leaves. 17,952. June 11. (Germany, September 25, 1928.)

I.G. Farbenindustrie Akt.-Ges. Feed apparatus for machines for de-pulping fibre-containing leaves. 17,967. (Germany, February 9.)

I.G. Farbenindustrie Akt.-Ges. Electric accumulators. 18,082. June 12.

I.G. Farbenindustrie Akt.-Ges. Manufacture of glacial acetic acid. 18,084. June 12. (Germany, July 14, 1928.)

I.G. Farbenindustrie Akt.-Ges. Process for colouring paper. 18,086. June 12. (Germany, June 25, 1928.)

I.G. Farbenindustrie Akt.-Ges. Spinning viscose. 18,087. June 12. (Germany, June 12, 1928.)

I.G. Farbenindustrie Akt.-Ges. Extinguishing fires with carbon tetrachloride. 18,206. June 13. (Germany, August 25, 1928.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of β-anthraquinone-carboxylic acids, etc. 18,220. June 13. (Germany, June 21, 1928.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of artificial masses. 18,221. June 13. (Germany, June 14, 1928.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of rubber derivatives. 18,272. June 13. (Germany, June 19, 1928.)

I.G. Farbenindustrie Akt.-Ges. Production of tyres for vehicles. 18,491. June 15.

Imperial Chemical Industries, Ltd. Method of charging powders into furnaces, etc. 18,308. June 14.

Imperial Chemical Industries, Ltd. Evaporation of liquids or solutions. 18,338. June 14.

Imperial Chemical Industries, Ltd., and Woolcock, J. W. Production of acetone. 18,339. June 14.

Imperial Chemical Industries, Ltd., and Wheeler, T. S. Preparation of alkyl cyanides. 18,340. June 14.

Imperial Chemical Industries, Ltd. Carrying out gaseous cataiytic reactions. 18,503. June 15.

Imperial Chemical Industries, Ltd. Feeding-arrangements for continuous distillation plant. 18,504. June 15.

Kali-Forschungs-Anstalt Ges. Method of producing potassium nitrate. 18,218. June 13.

Keil, F., and Skita, A. Manufacture of aminoalcohols. 18,380. June 14. (Germany, June 15, 1928.)

Langwell, H. Production of aliphatic acids, etc. 17,959. June 11.

Montecatini Soc. Generale per l'Industria Mineraria ed Agricola. Manufacture of ammonia salts. 17,806. June 10. (Italy, June 11, 1928.)

Oranienburger Chemische Fabrik Akt.-Ges. Manufacture of highly-stable sulphonic acids or their salts. 17,928. June 11. (Germany, June 11, 1928.)

Reavell, J. A. Distillation plants. 17,960. June 11.

Scottish Dyes, Ltd., Thomas, J., and Thomson, R. F. Production, etc., of vat dyestuffs, etc. 17,978. June 11.

Soc. of Chemical Industry of Basle. Manufacture of condensation products from formaldehyde, etc. 18,377. June 14. (Switzerland, June 15, 1928.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2 cwt. bags carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall. pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3⅞d. per lb., ex-wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6¼d. to 6⅜d. per lb. Crude 60's, 2s. per gall.

ACID CRESYLIC 99/100.—2s. 3d. to 2s. 8d. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Pale, 95%, 1s. 10d. to 1s. 11d. per gall. Dark, 1s. 7½d. to 1s. 8½d.

ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.

ANTHRACENE OIL, STRAINED, 1080/1090.—5½d. to 6d. per gall. 1100, 6d. to 6¼d. per gall.; 1110, 6¼d. per gall. Unstrained, 6⅜d. to 7d. per gall.

BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 7½d. to 2s. per gall. Firm. Pure, 2s. to 2s. 2d. per gall.

XYLOL.—1s. 5d. to 2s. per gall. Pure, 1s. 8d. to 1s. 9d. per gall.

CREOSOTE.—Cresylic, 20/24%, 7½d. to 7⅝d. per gall.; Heavy, 6⅛d. to 6⅜d. per gall. Middle oil, 4¼d. to 5d. per gall. Standard specification, 3¼d. to 4¼d. per gall. Light gravity, 2¼d. to 2½d. per gall. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8½d. to 9d. per gall. Solvent, 90/160, 1s. 3½d. to 1s. 4d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 6d. per gall. Solvent 90/190, 1s. 1d. to 1s. 3d. per gall.

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.

NAPHTHALENE.—Crystals, £12 5s. to £14 10s. per ton. Quiet Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 34s. to 40s. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 4s. to 4s. 3d. per gall. 90/160, 3s. 9d. to 4s. 3d. per gall. 90/180, 2s. to 2s. 3d. per gall. Heavy, 1s. 6d. to 1s. 9d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5¼d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 7½d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—1s. 9d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.

ACETONE.—£78 per ton.

CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10½d. per gall. 16° Tw.

WOOD CRESOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d. per gall. Solvent, 4s. to 4s. 3d. per gall.

WOOD TAR.—£3 10s. to £4 10s. per ton.

BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£5 10s. to £7 per ton, according to quality.

CADMIUM SULPHIDE.—5s. to 6s. per lb.

CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £54 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—4⅝d. to 5⅞d. per lb.

LAMP BLACK.—£32 10s. per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£23 per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£10 to £12 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra

SULPHUR PRECIP. B. P.—£55 to £60 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. 10d. to 7s. per lb.

ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 6d. to 2s. 8d. per lb.

ACID, BENZOIC, B.P. 2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 4d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carraige paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—2s. 1d. to 2s. 2d. per lb., less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.
ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 7d. per lb. Technical.—10½d. to 11½d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 4½d. per lb., less 5%.
ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—7s. 9d. to 8s. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.
AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
ATROPHINE SULPHATE.—9s. per oz.
BARBITONE —5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.
BISMUTH CARBONATE.—9s. 9d. per lb.
BISMUTH CITRATE.—9s. 3d. per lb.
BISMUTH SALICYLATE.—8s. 9d. per lb.
BISMUTH SUBNITRATE.—8s. 3d. per lb.
BISMUTH NITRATE.—Cryst. 5s. 9d. per lb.
BISMUTH OXIDE.—12s. 3d. per lb.
BISMUTH SUBCHLORIDE.—10s. 9d. per lb.
BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W Qts. 11d. per lb.
BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 1s. 11½d. per lb.; potassium, 1s. 11½d. per lb.; granular, 1s. 10¾d. per lb.; sodium, 2s. 1½d. per lb.
CALCIUM LACTATE.—B.P., 1s. 2½d. to 1s. 3½d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—11d. to 1s. per lb., according to quantity other gravities at proportionate prices.
FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.
GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8½d. per lb.; sodium, 2s. 7½d. per lb., in 1 cwt. lots, assorted.
IRON AMMONIUM CITRATE.—B.P., 2s. 8d. to 2s. 11d. per lb. Green, 2s. 9d. to 3s. per lb. U.S.P., 2s. 9d. to 3s. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8¾d. to 9¼d. per oz., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.
MENTHOL.—A.B.R. recrystallised B.P., 20s. 6d. per lb. net; Synthetic, 11s. to 12s. per lb.; Synthetic detached crystals 11s. to 16s. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 5d. to 1s. 8d. per lb.
METHYL SULPHONAL.—18s. 6d. to 20s. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—2s. 6d. to 2s. 9d. per lb.
PHENAZONE.—3s. 11d. to 4s. 2d. per lb.
PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—97s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 2s. 7d. per lb. in 1 cwt. lots.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—47s. per lb.; in quantity lower.
SALOL.—2s. 3d. to 2s. 6d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911.—2s. 4d. per lb., B.P.C. 1923—2s. 7d. per lb. Prices for 1 cwt. lots. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—100s. to 105s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 2s. 2d. to 2s. 5d. per lb. Crystal, 2s. 3d. to 2s. 6d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—9s. 6d. to 10s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.
THYMOL.—Puriss., 9s. 1d. to 9s. 4d. per lb., according to quantity. Firmer. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—11s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—5s. per lb.
AMYL SALICYLATE.—2s. 9d. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 10d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 3d. per lb.
CINNAMIC ALDEHYDE NATURAL.—14s. per lb.
COUMARIN.—9s. per lb.
CITRONELLOL.—10s. per lb.
CITRAL.—8s. per lb.
ETHYL CINNAMATE.—6s. 6d. per lb.
ETHYL PHTHALATE.—3s. per lb.
EUGENOL.—12s. 6d. per lb.
GERANIOL (PALMAROSA).—21s. per lb.
GERANIOL.—6s. 6d. to 10s. per lb.
HELIOTROPINE.—6s. per lb.
ISO EUGENOL.—14s. 3d. per lb.
LINALOL.—Ex Bois de Rose, 12s. 6d. per lb. Ex Shui Oil, 10s. per lb.
LINALYL ACETATE.—Ex Bois de Rose, 16s. per lb. Ex Shui Oil, 12s. per lb.
METHYL ANTHRANILATE.—8s. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—34s. per lb.
MUSK XYLOL.—7s. per lb.
NEROLIN.—3s. 9d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—10s. per lb.
RHODINOL.—52s. per lb.
SAFROL.—2s. 6d. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN, EX CLOVE OIL.—18s. per lb. Ex Guaiacol, 15s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.
ANISE OIL.—3s. per lb.
BERGAMOT OIL.—18s. per lb.
BOURBON GERANIUM OIL.—22s. per lb.
CAMPHOR OIL (White).—1s. 1d. per lb.
CANANGA OIL, JAVA.—11s. 6d. per lb.
CASSIA OIL, 80/85%.—6s. 3d. per lb.
CINNAMON OIL LEAF.—9s. per oz.
CITRONELLA OIL.—Java, 2s. 6d. per lb., c.i.f. U.K. port. Ceylon, pure, 2s. 4d. per lb.
CLOVE OIL (90/92%).—9s. 6d. per lb.
EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 10½d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, 17s. 6d. per lb.
LEMON OIL.—17s. per lb.
LEMONGRASS OIL.—4s. per lb.
ORANGE OIL, SWEET.—20s. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.
PALMA ROSA OIL.—12s. 6d. per lb.
PEPPERMINT OIL.—English, 87s. 6d. per lb.; Wayne County, 14s. per lb.; Japanese, 7s. 6d. per lb.
PETITGRAIN.—8s. 6d. per lb.
SANDALWOOD.—Mysore, 30s. per lb.: 90/95%. 20s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, June 20, 1929.

THERE has been quite a satisfactory expansion in the volume of business during the last week, and prices continue firm, with little alteration. One or two products are noticeably in rather short supply. Export business is improving.

General Chemicals

ACETONE.—The market is maintained, with a brisk demand. Prices are firm at £75 to £85 per ton, according to quantity, and little alteration is expected at the moment.

ACID ACETIC.—In rather short supply for near and forward delivery, with the market firm at £36 10s. to £37 10s. for 80% technical quality. A little difficulty is being experienced in covering early requirements.

ACID CITRIC.—Continues firm and in good request at 2s. 2d. to 2s. 3d. per lb.

ACID FORMIC.—Rather a better demand is on the market, with the price steady at £42 for 85%, in free carboys.

ACID LACTIC.—A steady demand is being received at £43 per ton, for standard qualities 50% by weight.

ACID OXALIC.—Substantial business is passing at the firm rates of £30 10s. to £32 10s., with the forward position firm.

ACID TARTARIC.—A marked increase in the demand is reported, with prices firm at 1s. 4¾d., less 5%.

ALUMINA SULPHATE.—A brisk demand continues with supplies rather scarce. Prices continue very firm at £7 15s. to £8 per ton.

ARSENIC.—Rather more business is being placed, and price is unchanged at £16 5s., free on rails mines.

BARIUM CHLORIDE.—With heavier demands on the market, the price is again higher and the product in short supply. Price nominally £11 10s., ex wharf.

CREAM OF TARTAR.—Higher prices have been quoted in some directions, with the market very firm. Average price £98 to £100 per ton, for 99/100%, B.P. quality.

COPPER SULPHATE.—Brisk business has been concluded, with the product steady at about £27 to £28 per ton.

FORMALDEHYDE.—Steady and in fairly good request at about £39 per ton.

LEAD ACETATE.—Rather more business has been placed, white at £44, and brown at £43.

LEAD NITRATE.—Rather slow of sale at about £33 15s.

LIME ACETATE.—Unchanged at about £18.

LITHOPONE.—In better request at £19 15s. to £22 per ton, according to quantity.

METHYL ACETONE.—A rather increased demand has been received, with the market firm at £58 to £60 per ton.

POTASSIUM CHLORATE.—Steady at the unchanged price of £28 to £30 per ton.

POTASSIUM PERMANGANATE.—Business has been quite good, with the price steady at 5½d. per lb. for B.P. material.

POTASSIUM PRUSSIATE.—Supplies are rather short for early delivery, with the market extremely firm. Demand is brisk and price £63 10s. to £65 10s., according to quantity.

SODIUM ACETATE CRYSTALS.—Higher prices are quoted for standard crystal quality, which continue in short supply. Price £22 10s. to £23 per ton.

SODIUM BICHROMATE.—In brisk request at the higher price of 3⅝d. per lb., with discounts for contracts. The position is very firm.

SODIUM HYPOSULPHITE.—Commercial quality continues rather dull, but there is an improved demand for photographic pea crystal quality, which is firm at £14 10s. to £15 per ton.

SODIUM NITRITE.—In satisfactory demand at about £20 per ton.

SODIUM PHOSPHATE.—There is only a small inquiry at about £12 per ton for dibasic and £16 10s. for tribasic, at which prices markets are firm.

SODIUM PRUSSIATE.—In steady request at the firm rates of 4¾d. to 5½d. per lb.

TARTAR EMETIC.—Unchanged at about 11¼d. per lb.

ZINC SULPHATE.—Steady at about £12 per ton, with a fair demand.

Coal Tar Products

The coal tar product market still remains inactive, with no appreciable change in prices.

MOTOR BENZOL is unchanged at 1s. 7d. to 1s. 7½d. per gallon, f.o.r. makers' works.

SOLVENT NAPHTHA is quoted at 1s. 2½d. to 1s. 3d. per gallon.

HEAVY NAPHTHA remains at 1s. 2d. per gallon, f.o.r.

CREOSOTE OIL is unchanged at 3½d. to 4d. per gallon in the North, and at 4¾d. to 5d. per gallon in London.

CRESYLIC ACID is quoted at about 1s. 10d. per gallon for the 98/100% quality, and at about 1s. 8d. per gallon for the dark quality 95/97%.

NAPHTHALENES.—The firelighter quality remains at about £4 10s. per ton, the 74/76 quality at about £5 per ton, and the 76/78 quality at £6 to £6 5s. per ton.

PITCH.—Makers are asking 37s. 6d. to 40s. per ton for September shipment and onwards, but buyers show no inclination to pay these prices.

Nitrogen Products

Sulphate of Ammonia.—During the last week the price has remained steady at £9 1s. 6d. per ton in single bags, f.o.b. U.K. port, for neutral quality basis 20·6 per cent. nitrogen. It is anticipated that the large continental producers will be announcing their prices shortly. In the meantime buyers tend to hold off.

Home.—The home price remains unchanged at £10 13s. per ton, delivered in 6-ton lots to consumers' nearest station. As the home season is practically over, purchases are only small.

Nitrate of Soda.—Small sales continue to be made at scale prices. No large business will be transacted until the fresh price scale is announced.

Latest Oil Prices

LONDON, June 19.—LINSEED OIL was steady. Spot, ex mill, £29 5s.; June to August, £27 17s. 6d.; September-December, £28 2s. 6d.; and January-April, £28 10s., naked. RAPE OIL was inactive; crude, extracted, £40 15s.; technical, refined, £42 15s., naked, ex wharf. COTTON OIL was quiet. Egyptian crude, £27; refined common edible, £32; and deodorised, £34, naked, ex mill. TURPENTINE was quiet and occasionally 3d. per cwt. lower. American spot, 44s. 6d.; June, 43s. 9d.; and July-December, 42s. 3d.

HULL.—LINSEED OIL.—Spot to July-August, £28 12s. 6d.; September-December, £28 7s. 6d. per ton, naked. COTTON OIL.—Bombay, crude, spot, £27; Egyptian, crude, spot, £28; June-August, £27 10s.; edible refined, spot, £31; technical, spot, £30 15s.; deodorised, spot, £33 per ton, naked. PALM KERNEL OIL.—Crude, 5½ per cent. spot, £31 10s. per ton, naked. GROUNDNUT OIL.—Crushed-extracted, £32 5s.; deodorised, £36 5s. per ton. SOYA OIL.—Extracted and crushed, £30; deodorised, £33 10s. per ton. RAPE OIL.—Crushed-extracted, £40 10s.; refined, £42 10s. per ton. TURPENTINE.—Spot, 47s. per cwt., net cash terms, ex mill. CASTOR OIL and COD OIL.—Unchanged.

South Wales By-Products

AN unsatisfactory demand continues to be a feature of South Wales by-product activities. The demand for pitch remains unusually slow, but prices are firm on the basis of 34s. to 36s. per ton. Creosote is dull and freely on offer at from 3½d. to 4¾d. per gallon. Motor benzol is unchanged at from 1s. 6d. to 1s. 8d. per gallon. Road tar has a small inquiry, with values steady at from 10s. 6d. to 13s. per 40-gallon barrel, while crude tar is slightly better at from 24s. to 28s. per ton. Solvent naphtha continues weak round 1s. 3½d. to 1s. 6d. per gallon, and a similar remark applies to heavy naphtha at from 11d. to 1s. 1d. per gallon. Refined tars enjoy a steady, if moderate, call, with values unaltered. Crude naphthalene is weak round 80s. per ton, as the whizzed quality is at about 100s. per ton. Patent fuel and coke exports are unchanged. Patent fuel, ex-ship Cardiff, is quoted 20s. to 21s. 6d. per ton; ex-ship Swansea, 20s. to 20s. 6d. per ton. Coke quotations are:—Best foundry, 32s. 6d. to 36s. 6d.; good foundry, 26s. 6d. to 32s.; and furnace from 21s. to 23s. per ton. Oil imports over the last four ascertainable weeks amounted to 27,735,775 gallons.

The De Vecchis Process Patents

WE are informed by Dr. Ineo De Vecchis, the inventor of the process for manufacturing beet sugar by drying which is covered by what are called the De Vecchis Patents, that he intends in the English Courts to contest the transfer of the De Vecchis Patents by De Vecchis (Foreign and Colonial), Ltd., to the Sugar Beet and Crop Driers, Ltd., which was recently announced. Dr. De Vecchis, we understand, is at present successfully working his process on a commercial scale in Italy.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, June 19, 1929.

THE heavy chemical market has been fairly active during the past week, but the proportion of actual orders booked to inquiry going around is rather less than has been experienced for some little time. A fair amount of business has been done, however, particularly for export, and no doubt the inquiry now going around will lead to further business in the near future. Prices remain on the same level as last reported.

Industrial Chemicals

ACETONE.—B.G.S., £76 10s. to £85 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—98/100% Glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flaked, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations. There are a few fairly cheap offers made from the Continent.

ACID CARBOLIC ICE CRYSTALS.—Unchanged at 6¼d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC B.P. CRYSTALS.—Quoted 2s. 2½d. per lb., less 5%, ex store, spot delivery. Offered at 2s. 2¼d. per lb., less 5% ex wharf, prompt shipment from the Continent.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80° QUALITY.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Price remains unchanged at about 3½d. per lb., ex store. Offered for prompt shipment from the Continent at 3⅛d. per lb., ex wharf.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 158° quality. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC B.P. CRYSTALS.—Spot material now quoted 1s. 4½d. per lb., less 5% ex wharf.

ALUMINA SULPHATE.—In scarce demand and price now quoted about £7 per ton, ex wharf.

ALUM LUMP POTASH.—Unchanged at about £8 12s. 6d. per ton, c.i.f. U.K. ports. Crystal meal offered on spot at £9 per ton, ex store.

AMMONIA ANHYDROUS.—Quoted 7½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton; powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Quoted £37 per ton, c.i.f. U.K. ports, prompt shipment from China. Spot material unchanged at about £40 per ton, ex store.

ARSENIC, WHITE POWDERED.—Unchanged at £18 5s. per ton, ex wharf, prompt despatch from mines. Spot material quoted £19 15s. per ton, ex store.

BARIUM CHLORIDE.—Quoted £10 10s. per ton, c.i.f. U.K. ports, prompt shipment.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4 ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price £4 5s. per ton to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Still in fairly good demand and price now quoted is £36 10s. per ton, ex store.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 5s. per ton, ex wharf.

LEAD, RED.—On offer at £29 15s. per ton, ex store.

LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted £41 10s. per ton; brown on offer at about £39 10s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4⅜d. per lb. delivered U.K. or c.i.f. Irish ports, with an allowance of 2½% for minimum 2½ tons to be taken.

POTASSIUM CARBONATE 96/98%—Spot material now quoted £26 10s. per ton, ex store. Offered from the Continent £25 10s. per ton, c.i.f. U.K.

POTASSIUM CHLORATE 99¾/100% Powder.—Quoted £25 10s. per ton, ex wharf. Crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Offered for prompt shipment from the Continent at 6¾d. per lb., ex wharf. Spot material quoted 7d. per lb., ex store.

SODA, CAUSTIC.—Powdered 98/99%. Now £17 10s. per ton in drums; £18 15s. per ton in casks. Solid 76/77%, £14 10s. per ton in drums and 70/75%, £14 2s. 6d. per ton in drums, all carriage paid buyers' stations, minimum 4 ton lots; for contracts, 10s. per ton less.

SODIUM ACETATE.—65% Crystal quality quoted about £19 15s. per ton, ex wharf. 73/78% Anhydrous quality on offer at £20 per ton, carriage paid buyers' stations.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Manufacturers advise an advance in price of ½d. per lb., making the spot price now 3⅝d. per lb., delivered as from July 1, with special concession for contracts from 2½ tons up to 25 tons.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 1s. 3d. per ton, ex quay, minimum 4 ton lots with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4 tons lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4 ton lots. Prices for this year unchanged.

SODIUM NITRATE.—Ordinary quality quoted £10 12s. per ton, carriage paid, buyers' sidings, minimum 6 tons lots, usual extras for small quantities and refined qualities.

SODIUM PRUSSIATE.—Spot material quoted 7d. per lb. Offered for prompt shipment from the Continent at 6¾d. per lb., c.i.f. U.K. ports.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, 52s. 6d. per ton delivered for unground quality. Ground quality, 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption. Solid 60/62%, £9 per ton. Broken, 60/63%, £10 per ton. Crystals, 30/32%, £7 2s. 6d. per ton, delivered buyers' works on contract, minimum 4 ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £10 7s. 6d. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now quoted at £22 10s. per ton f.o.b. U.K. ports.

ZINC SULPHATE.—Offered from the Continent at about £10 5s. per ton, ex wharf.

Poison Bottles

MR. W. J. CHILD (the Eton Glassworks), writes: "With reference to the paragraph in THE CHEMICAL AGE of June 8 (p. 543) regarding a poison bottle covered with sharp protuberances as a safeguard against poisoning accidents, we should like to point out that this idea is not by any means new. One of the latest types of bottle of this kind is that patented by us under the name of the "Eton Poison Bottle," and it is considered most effective. There is a tendency in this country to pay rather undue deference to inventions by German patentees as compared with those of English origin, and this is a case in point. We are makers of a bottle fulfilling all the necessary requirements, and at a price that compares favourably with any other make, English or foreign, and we are quite sure that with your acknowledged support of home industries, you will give this letter your careful attention."

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, June 20, 1929.

Conditions in the chemical market during the past week has been of a rather patchy character and probably the experience of no two sellers has been alike. On the whole, however, inquiry in the principal sections of the market has been fairly steady, and altogether a moderate volume of business, both on prompt and early delivery account, has been put through. Taking the market generally, quotations are steady, with here and there a tendency towards increased firmness.

Heavy Chemicals

Chlorate of soda has attracted a certain amount of buying interest during the week and little quotable change has taken place in the price position, offers being at round 2¾d. per lb. Prussiate of soda meets with a quietly steady demand at firm prices, these ranging from about 4¾d. to 5d. per lb., according to quantity. Not a great deal of business is passing in the case of sulphide of sodium, but prices are pretty much as they were, the commercial grade being obtainable in the neighbourhood of £8 per ton and the 60–65 per cent. concentrated solid quality at £9. Both alkali and bicarbonate of soda are in fairly good inquiry and values keep firm, the former at about £6 per ton and the latter at £10 10s. in contracts. With regard to bichromate of soda, prices are well held at round 3¾d. per lb., and a moderate weight of buying has been done in this section of the market during the week. There has been some inquiry about for hyposulphite of soda at a steady range of quotations; offers of the photographic material are on the basis of £15 10s. per ton and of the commercial kind at about £8 15s. Caustic soda moves off in fairly steady quantities, both for prompt parcels and against contract commitments, the latter being quoted at from £12 15s. to £14 per ton, according to grade. Saltcake is obtainable at from £2 10s. to £2 15s. per ton, with only a comparatively quiet trade reported during the past few days. There is a moderate demand about in the case of phosphate of soda, with current offers of this material at about £11 15s. per ton.

Among the potash products, yellow prussiate keeps very firm and is selling in fair quantities at from 6¾d. to 7¼d. per lb. Bichromate of potash is steady at about 4½d. per lb. and a moderate amount of inquiry is being met with. Buying interest in the case of carbonate of potash is pretty regular and values remain at £26 5s. per ton, with caustic potash steady and in fair request at from £33 5s. per ton for prompt delivery of one to five-ton lots. Chlorate of potash is currently quoted at from 3d. to 3¼d. per lb., though sales this week have been rather restricted. Permanganate of potash has being selling in moderate quantities; offers of the commercial quality are at about 5½d. per lb., with the B.P. at 5⅝d. per lb.

A quietly steady movement of sulphate of copper has been reported this week and on balance quotations show little change at round £28 per ton, f.o.b. Only a moderate trade is being done in arsenic, with sales at from £16 to £16 5s. per ton at the mines, for white powdered Cornish makes. The lead products are steady again, although the demand is on the slow side, with acetate at £39 10s. per ton for brown and £40 to £41 for white, and nitrate at £34 to £34 10s. In the case of acetate of lime, prices are easy in tendency at round £8 5s. per ton for the brown quality and £16 10s. for the grey.

Acids and Tar Products

Acetic acid continues to sell in moderate quantities and quotations are quite firm at about £36 per ton for the 80 per cent. commercial quality and £66 to £67 per ton for the glacial. A steady inquiry is reported for citric acid, with offers well held at 2s. 2d. per lb., tartaric acid also being reasonably active at from 1s. 4¼d. to 1s. 4½d. per lb. With regard to oxalic acid, interest in this material is still on the quiet side, but at round £1 11s. 6d. per cwt., ex store, there has been no change in the price position.

A quiet business is being done in pitch on forward delivery account at £1 17s. per ton. f.o.b. Creosote oil continues inactive and values are easy at about 2¾d. per gallon, naked. Both crude and crystal carbolic acid meet with a steady demand and quotations are very firm at 2s. per gallon, naked, for 60's crude and 6¾d. per lb., f.o.b., for crystals. Solvent naphtha keeps steady and is in moderate request at 1s. 2¾d. to 1s. 3d. per gallon.

Company News

Bussey Coal Distillation.—A dividend of 8 per cent. is announced on the preference shares for the period to June 30.

Cyprus Asbestos Co.—The net profit for 1928 was £61,036. The reserve account has been raised to £50,000 by the transfer of £46,299 from the profit and loss, leaving £43,724 (against £28,986) to be carried forward.

Santa Rita Nitrate Co.—For the year 1928 the trading profits, including interest, etc., amounted to £5,456; stoppage and administration expenses, including loss and depreciation on stores and Chilean income tax, were £11,655, leaving a debit balance of £6,209 to be carried to profit and loss account, raising total debit balance to £7,994.

Minerals Separation, Ltd.—A final dividend is recommended by the directors in respect of the year ended December 31, 1928, of 20 per cent. (equivalent to 4s. per share), less income tax, payable on July 1. This dividend, with the interim dividend of 5 per cent., which was paid on June 21, 1928, represents a total distribution of 25 per cent. for the year ended December 31, 1928, against 12½ per cent. for 1927.

Horace Cory and Co.—The directors have decided, in view of the money required to extend the new acquisition of Price's Patent Dry Lithographic Ink, to pass the payment of an interim dividend on the Ordinary shares for the six months ending June 30, 1929. Last year the ordinaries received an interim of 4 per cent., followed by a final of 3 per cent., making a total of 7 per cent. for 1928, against 9 per cent. for 1927.

Alianza Co.—The report for the year 1928 states that the gross profit was £103,857, from which is deducted depreciation of plant, £30,000, leaving £73,857. London and Valparaiso charges were £15,178, Chilian taxes £7,903, and interest and discounts £13,574, leaving net profit of £37,212, to which is added balance brought forward, £214,734, making £251,946. The local board recommends total dividend for year of 7 per cent., carrying forward £216,946.

Tarslag (1923).—The profit from the trading accounts for the year ended December 31, 1928, was £16,939 (against £16,234, which included £2,131 profit realised on property sale), to which is added £377 brought in making a total of £17,317. The amount written off as depreciation is £13,705 (against £9,332). The directors' fees amount to £700 (against £711) and a reserve has been made for income tax for 1928 of £1,889 (against £2,953), leaving £1,021, which the directors recommend should be carried forward.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks, and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to July 5, 1929.

Phosokresol.

501,488. Class 1. Chemical substances used in manufactures, photography or philosophical research. I.G. Farbenindustrie Aktiengesellschaft (a corporation organised under the laws of Germany), 28, Mainzer Landstrasse, Frankfurt-on-Main, Germany; manufacturers.—April 4, 1929.

Pliolac.

501,518. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. R. S. Clare and Co., Ltd., 8 to 15, Stanhope Street, Liverpool; tar distillers and manufacturers.—April 5, 1929. To be associated with No. 347,415 (1816) xvii and others.

Planedrin.

501,775. Class 3. Chemical substances prepared for use in medicine and pharmacy. May and Baker, Ltd., Garden Wharf, Church Road, Battersea, London, S.W.11; manufacturing chemists.—April 13, 1929. To be Associated with No. 409,581 (2,273) and another.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

STANSFIELD, John, Boothfold, Waterfoot, chemical manufacturer. (C.C., 22/6/29.) £11 6s. 8d. April 20.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

ELTHAM PAINT AND VARNISH CO., LTD. (M. 22/6/29.) Registered June 4, £5,000 charge and a Land Registry charge collateral thereto, to A. Bell, 188, Great College Street, Camden Town; charged on the Old Brewery and Crofton House, High Street, Eltham.

NITRO-CELLULOSE EXPLOSIVES CO., LTD., London, W.C. (M., 22/6/29.) Registered June 6, £500 debentures part of £12,500; general charge.

OZONE CHEMICAL CO., LTD., Talke. (M., 22/6/29.) Registered June 8, £3,000 (not ex.) charge, to Bank; charged on land, works and other buildings at Talke. *Nil. June 8, 1928.

London Gazette, &c.

Companies Winding Up Voluntarily

MITCHAM JAPAN AND VARNISH CO., LTD. (C.W.U.V., 22/6/29) By special resolution, May 27, confirmed June 11. A. White, 26-27, Bush Lane, Cannon Street, London, E.C.4, appointed as liquidator.

THOMPSON (J. AND J.) AND CO., LTD. (C.W.U.V., 22/6/29.) By special resolutions, May 13, confirmed May 28. S. B. Halliwell, 93, Brompton Street, Oldham, appointed as liquidator.

THOMPSON (J. AND J.) (ASHTON-UNDER-LYNE), LTD. (C.W.U.V., 22/6/29.) By special resolutions, May 13, confirmed May 28. S. B. Halliwell, 93, Brompton Street, Oldham, appointed as liquidator.

Partnership Dissolved

BEHARELL AND SON (Hobart Sydney BEHARELL and Charles John BEHARELL), paint, varnish and grease manufacturers, London Road, Barking, by mutual consent as from May 17, 1929. Debts received and paid by C J Beharell, who will continue the business on his own account.

Receiverships

DYWAXSTAIN CO., LTD. (R., 22/6/29.) E. H. Hawkins, of 4, Charterhouse Square, E.C.1, was appointed receiver and manager on June 5, under powers contained in instrument dated April 19, 1929.

EAST MOORS CHEMICAL CO., LTD. A. B. Davies, of 7/8, Oxford Street, Swansea, ceased to act as receiver or manager on May 15, 1929.

New Companies Registered

BUSSEY INTERNATIONAL, LTD., Carlton House, Regent Street, London, S.W.1. Registered as a "public" company on June 15. Nominal capital £1,500,000 in £1 shares. To acquire the benefit of, or licences to operate in all or any countries of the world, any inventions (whether patented or not) relating to processes in or apparatus for treating coal or other carbonaceous material for the extraction or recovery therefrom of the oil, gas or other volatile hydrocarbon constituents, and in particular the Bussey Low Temperature Process and apparatus for use in the working thereof, and to carry on the business of manufacturing, producing, treating and dealing in coal, shale, lignite, and other carbonaceous substances and fuels and the constituents and by-products of any such fuels; colliery and mine owners, smelters, coke manufacturers, manufacturers of chemicals, oils and smokeless fuels, etc. Directors: The Rt. Hon. Earl of Verulam, Edward Harrison, Viscount Fielding, Aubrey Powell, Claude F. Gifford.

THE COTTON TREATING SYNDICATE, LTD. Registered as a "private" company on June 13. Nominal capital, £5,000 in 1s. shares. To adopt agreements (1) with the British Cyanides Co., Ltd., and (2) with Dr. L. Lilienfeld, to acquire and turn to account any patents, licences, concessions and trade marks, and to carry on the business of dressers, fillers, coaters, printers, sizers or treaters of cotton goods with cellulose and other materials, workers and operators of any other processes relating to cotton goods and the treatment thereof; manufacturers of and dealers in chemicals of all kinds. A subscriber: Dr. Leon Lilienfeld, VIII Zeltgasse 1, Vienna. Dr. L. Lilienfeld and/or Mrs. L. Lilienfeld, so long as he, she or they jointly or severally hold a majority of the issued ordinary shares, shall be entitled to appoint not more than three directors, and the British Cyanides Company, Ltd., shall be entitled, so long as it holds 30 per cent. of the issued ordinary shares, to appoint not more than two directors.

DAVIES, MASON AND CO., LTD. Registered June 15. Nominal capital £1,000 in £1 shares. To carry on the business of shipping, pharmaceutical, analytical, manufacturing and consulting chemists, etc. Directors: E. B. Davies, 44, Great North Road, Newcastle-on-Tyne, R. Mason.

METAFILTERS (1929), LTD. Registered as a "public" company on June 17. Nominal capital £80,000 in 5s. shares. To acquire the undertaking of Metafilters, Ltd., and all or any of the assets and liabilities thereof; to acquire from the said company or from J. A. Pickard the benefit of certain inventions for improvements in or relating to filters and non-choking filters, and to carry on the business of metal manufacturers, smiths, engineers, electricians and machinists, and that of general dealers for the supply of a chemical preparation known as Metasil, and all other chemical or other preparations used or manufactured by the company in its business, etc. Directors: Admiral Sir William R. Hall, 63, Cadogan Gardens, London, S.W., M. J. H. Brown, S. H. Buxton, J. Parker, J. A. Pickard, H. E. H. Tripp.

THE SCOTTISH TAR DISTILLERS, LTD., Camelon, Falkirk. Registered in Edinburgh as a "private" company on June 15. Nominal capital £350,000 in 140,000 preference and 210,000 ordinary shares of £1 each. To acquire, amalgamate, and carry on the business of tar and ammonia distillers, etc. Directors: F. Tudsbery, Champflurie, Linlithgow, H. Ellison, F. Ellison.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

FRUIT GROWERS' CHEMICALS.—A New Zealand firm with good connections wishes to secure the representation of British manufacturers. (Reference No. 539.)

HEAVY, LEATHER AND TEXTILE CHEMICALS.—A firm of import, export and general commission agents in Sofia desires to obtain the representation of British manufacturers or exporters. (Reference No. 547.)

PHARMACEUTICAL PRODUCTS.—An agent in Cologne-Ehrenfeld desires to secure the representation of British manufacturers on a commission basis, for the Rhineland and Westphalia. (Reference No. 548.)